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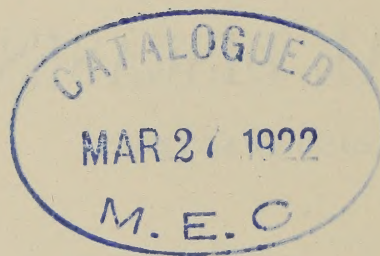
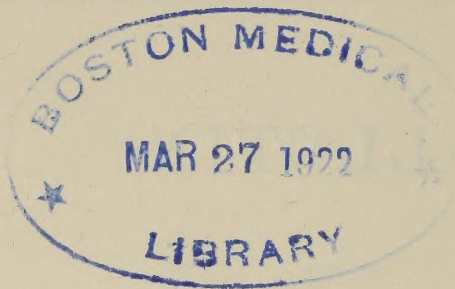
EDITED UNDER THE PROVISIONS OF ACTS OF 1909, CHAPTER 504, SECTION 6, BY

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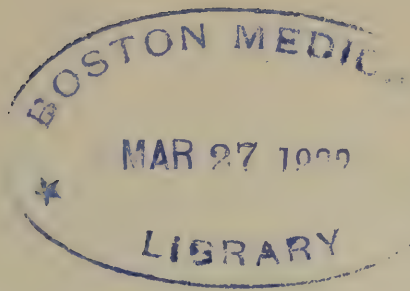
JANUARY, 1919



PUBLICATION OF THIS DOCUMENT
APPROVED BY THE
SUPERVISOR OF ADMINISTRATION.

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SOCIAL SERVICE IN THE STATE HOSPITAL.*

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In order to perform its work in the most efficient manner, a state hospital must, among other things, have the confidence of the community it serves. Especially is this so of the State hospitals that have to do with the care and treatment of the mentally sick. Any hospital that admits a patient really enters into a contract with that individual to give its assistance by doing everything possible to the end that the patient may be restored to health. It is therefore necessary that the hospital seek such information as will enable it to keep its contract.

The recognition of the fact that social conditions play a large part in the causation of disease holds the hospital responsible for the welfare of the patient after discharge from the hospital. Hospital problems are therefore social as well as medical, and accordingly there is need of trained social service workers, as well as physicians. The two must recognize a common ground in their treatment of sickness and disease in the community.

If it be granted that the hospital exists for curative and reconstructive purposes, it then follows that the social aspects of disease and its treatment must be carefully considered. Close study of disease reveals the fact that the underlying causes of a great many diseases are poor social conditions, such as poverty, ignorance, vice, overcrowding, and serious industrial conditions. Social service is defined by Dr. Cabot as "the study of the character under adversity, and of the causes that mold it for good or ill." "History shows that medical work and social work are branches split off the same trunk — the care of people in trouble. The union of these two forces dealing with people in trouble results in the establishment of methods which aim to supply all essentials which would be otherwise lacking in a human life."

Before the establishment of social service in the hospital, it was practically impossible to extend hospital treatment into the

* Read at the seventy-second annual meeting of the American Medico-Psychological Association, New Orleans, La., April 4-7, 1916. (Danvers State Hospital Contribution No. 67.)

† Now director Massachusetts Commission on Mental Diseases.

community. Advice and treatment in reality began and ended inside the hospital. After-results were seldom learned by the hospital physicians. Many patients eventually returned for treatment, often suffering from the same trouble for which they first came for help. Directions and advice were constantly given and seldom fulfilled, for various reasons, good or otherwise. Such a method of treatment is not only expensive, but is in reality useless in some respects, if the underlying causes of sickness remain unknown, especially those relating to social conditions. With a social service established in the hospital, many of these needs are met satisfactorily.

Hospital social service was first started by the Society for the After-Care of the Insane in England. This service was augmented by the work of the Lady Almoners, in London, who visited hospital patients in their homes to learn of their needs, social or medical, and to refer them to the proper agencies. The visiting nurses' service was also valuable, in that the nurse cared for the people in their homes, and became familiar with their problems, which differed widely from the nursing service in the hospital. Still another form of hospital social service is to be noted in that of the social training given to the medical students of Johns Hopkins Hospital, in assigning them to work in the community, under the direction of the Associated Charities Organization.

The after-care work with the mentally sick in England dates back to about 1880, and consisted in looking after discharged patients in their own homes, and in giving them friendly supervision. It was the work of this society that first interested the State authorities of New York in connection with the care of the mentally sick. The first social service department established in connection with a hospital dates back to Oct. 3, 1905, when a nurse who had done some settlement work was installed in the Massachusetts General Hospital by Dr. Cabot, to investigate the home conditions of certain patients, and to see that the prescribed treatment was carried out. Dr. Richard C. Cabot is looked upon as the father of social service in this country. It was he who believed that the treatment of the patient should be more effective, and that a correct diagnosis should be made, if possible. It was he who was impressed by the futility of giving directions which were not fulfilled. He believed that hospital treatment should be made more effective, and studied a plan to make it become so.

In a little over a year from the time Dr. Cabot installed a nurse as a helper, a meeting was held by the officers of the outpatient department of the Massachusetts General Hospital, who recognized the work as a department. This was the first example of general, organized, hospital social service in the United States, as a separate department, and yet as an integral part of the hospital equipment. About a year later, in July, 1906, a similar department was started at the Bellevue Hospital in New York. The number has grown rapidly, and at the present time there are over one hundred social service departments connected with the general hospitals and dispensaries in this country.

Social service, as first applied to State hospitals for the mentally sick in this country, was established in New York. The Charities Aid Association employed an after-care agent to work among discharged hospital cases. This worker found in the homes of State hospital patients many persons who were on the verge of nervous or mental breakdown, and believed that the need of preventive work was very obvious and pressing. As a result of this discovery, the Mental Hygiene Committee, under the State Charities Aid Association, came into existence. For about two years they distributed literature on nervous and mental diseases, these publications being sent to all parts of the State. Public meetings were held to instruct the people regarding mental diseases. As a result of this movement, many inquiries were received from sufferers, and the problem thus presented revealed the need of a social worker who would attend primarily to preventive work. In August, 1912, a social worker was appointed for this work: namely, to attend to inquiries received, and to gather material as to the value and effect of preventive work through social service in mental diseases. The work has since extended to other State hospitals in New York.

Massachusetts was next to install social service in State hospitals, though in a somewhat different manner from that of New York. With the opening of the psychopathic hospital in Boston, a social service worker was employed to attend to the social needs of all patients admitted to the hospital. This took place during the latter part of 1912. A few months later, May 28, 1913, the Danvers State Hospital engaged the services of a social worker who should live in the hospital. This work was established for purely social reasons. The worker was to gather social data concerning patients in the hospital, with a view to replacing a larger number of patients in the community. The study of

social causes, or contributing factors, to mental disease, and the contribution of such knowledge to the hospital, was to be used as supplementary material to the medical knowledge. In addition to these reasons for establishing social service was that of securing the co-operation of the community in the care and treatment of the mentally sick. After-care work of discharged patients is considered a vitally important part of this department.

In July of the same year the Boston State Hospital installed a social service worker. Within a very short length of time, the number spread in Massachusetts, so that practically every State hospital for the mentally diseased has at least one social worker. Although New York was the first State to introduce this work in this country, Massachusetts is quoted as being the only State where the work is fully developed and organized under State management. A movement is now on foot to standardize the work of social workers in the State hospitals of Massachusetts, and for studying measures which will lead to better and more extensive preventive work.

When the social service department was established at the Danvers State Hospital it was necessary to organize the work to fit the needs of the institution, which were recognized as three-fold.

1. *The Needs of the Patient (both Medical and Social).* — Inasmuch as a diseased mind or body cannot be adequately considered apart from the contributing social factors, treatment cannot become efficient until a social knowledge of the patient is obtained.

2. *The Needs of the Institution.* — These are obviously many and varied. In order that the hospital may best serve the purpose for which it is intended, it is quite essential that full and reliable information relative to patients be obtained. Social data thus acquired make it possible for hospital statistics to lead toward definite action as regards legislation relative to the treatment and prevention of mental disease. Another distinct need of the hospital is that of co-operation on the part of the community. In no other way can the forces be joined which should work toward preventive measures, and toward the establishment of practical methods of after-care of patients in the community.

3. *The Needs of the Community.* — These are essentially three in number: (a) education as to the causes, treatment and prevention of mental disease; (b) instruction as to the after-care of patients who return to community life; (c) an awakened sense of

responsibility toward dependent or partially dependent persons who are mentally handicapped.

The work has been developed until at the present time it includes the following divisions: —

I. Investigation of special cases for specified purposes, usually relative to after-care of patients who are under consideration for discharge or trial visit at home.

II. The securing of histories, medical and social, outside the hospital.

III. Home visitation or after-care of out-patients.

IV. Systematic boarding-out of patients in private families.

V. Connecting needy persons with the proper agencies.

VI. The weekly attendance upon the out-patient clinics.

I. INVESTIGATION OF SPECIAL CASES FOR SPECIFIED PURPOSES.

The number of such cases is constantly growing as we endeavor to really do something more than care for the patient. Where special investigations are made we are not so free as formerly to believe that many statements of patients are delusions. Where consideration of condition of patient alone would lead to advising against home visits, we are now enabled to determine whether home conditions are satisfactory. It is, and should be, our desire to return to the community every one where there is a possible chance of the patient being able to get along outside of the hospital. It may be desirable to have investigations made through the social service department in special diseases, such as pellagra. Complaints to the State Board of Insanity, where exception is made to the opinion of the hospital staff regarding the release of patients, are made the object of investigation on the part of the social service workers. The following report of the social service worker's investigation of a special case illustrates the value of the work: —

Mary B——, twenty-four years of age, of good family, American, fair education, single, became pregnant. Worry, anxiety, remorse and the unsympathetic attitude of her family contributed to a mental breakdown. Marriage was impossible as the father of the child was a married man with a family, a business man with some social standing. Because of his business and social standing, and likewise because of a doubtful moral standing, he attempted to free himself from all obligation and notoriety by the payment of a few hundred dollars which was to release him from all future obligations. Mary was never able to earn over \$5 or \$6 a week; her family was in poor financial condition and bitter over

the occurrence. This unmarried mother was practically left alone to face her problem and to carry her burden. She was never strong mentally and following the birth of her child became mentally deranged. The child was placed with a children's agency and boarded in a private family. Mary improved and returned to her home in the course of time. Her family, who keenly felt the disgrace of the whole affair, was not entirely co-operative in helping to keep Mary in a good mental and physical condition; the possibility of a recurrence of the trouble had not occurred to them. It became obvious that some definite plan must be made as to the permanent care of her child. Here was an illegitimate male child of a defective mother who had been insane; no permanent means of support; nearest relatives antagonistic. Four different agencies were in touch with the case and not one had given due consideration to the fact of the mother's mental condition or prognosis. Each society had specified rules for the care of dependent children and religiously adhered to them. It was a new departure for them to take the mental feature of the case into consideration, especially as the mother of the child was able to live under supervision in the community. With the co-operation of the hospital worker, plans were gradually changed; the case is now in the hands of a legal society which will compel the father of the child to contribute indefinitely toward his support according to the laws of the State. The child is placed in a permanent home with people who will place him on a good physical and economic basis. Possibly the best phase of the solution of this case was the educational aspect which these various agencies received in considering a case connected with a State hospital.

II. THE SECURING OF HISTORIES, MEDICAL AND SOCIAL.

Not infrequently patients are admitted where it would be impossible to secure a history were it not for the services of the social worker. Such histories are exceedingly valuable because in addition to the facts of primary interest to the physician, a social history is also obtained affording an insight into the needs of the patient that could not be had before the advent of a social worker. It is believed that a trained social worker can secure equally as good medical histories as physicians, thus allowing the latter more time for purely medical work and individual attention to the patient. Such histories have the added value of containing information regarding social factors which may have a bearing on the case, resulting in the physicians and social service workers co-operating in their efforts for the welfare of the patient.

Accordingly, it is desirable to have at the institution one member of the social service organization to meet relatives and friends

of patients who come to the institution to give information regarding the patient's mental sickness. An opportunity is also provided to secure a social history.

III. HOME VISITATION OR AFTER-CARE OF OUT-PATIENTS.

This work is both preventive and reconstructive and permits many more patients to live outside the hospital than would otherwise be possible without such supervision. The hospital keeps in close touch with its patients, and their return can be advised promptly if thought necessary. This work seemingly met with some opposition at first. Our social worker would relate that many thought our patients a type of criminal and that they were treated accordingly; that it was considered a disgrace to have a relative in the hospital. At first, in visiting discharged patients, she was looked upon as a hospital spy with some ulterior motives. It is interesting and gratifying to note how quickly public opinion changed, once the hospital's work was understood. The following case illustrates what was accomplished by after-care work: —

Mr. G——, about thirty-three years of age; Swedish birth; American citizen; meager education; a machinist by occupation. He developed the alcoholic habit which, in addition to some organic mental disease, resulted in his commitment to the hospital, where he remained for several months. He had a wife and child three years of age; wife was thrifty, industrious, of excellent character. She had endeavored to care for patient in his home although she was several months pregnant and had no knowledge of mental sickness. She became nervously and physically "run down," and upon her husband's commitment to the hospital was left without income, which added to her cares and burdened the patient, as he constantly talked of home affairs and believed he could never recover with this state of affairs present in his home. Arrangements were made for continuous material relief, that is, financial aid was secured from relatives and private societies; medical care was provided for the wife through and after her confinement. Frequent home visits, which, by the way, were requested, helped to pave the way for patient's return to his home when he should become able to leave the hospital. He also was prepared for home life through frequent ward visits. At the time of leaving the hospital he entertained some ideas against his wife; difficulty in securing steady employment was experienced, but these obstacles were gradually overcome; repeated explanations regarding the use of alcohol were made to patient and his relatives, all of whom co-operated in aiding patient to adjust himself to community life. Steady work, at a good wage, was secured. Patient is using no alcohol; family life is

happy; physical health of family is excellent; Mr. G—— has been out of the hospital two years and is steadily showing improvement.

Educational and preventive work is made possible by after-care work, and the general attitude of the community toward the hospital is rapidly changing from that of suspicion to one of confidence.

IV. BOARDING-OUT OF PATIENTS.

Since Jan. 1, 1915, the work of boarding-out of patients formerly cared for by the State Board of Insanity has been turned over to the various institutions. This has resulted in much more work for the social service department, both in making visits to the private homes where patients are boarded and also investigating the homes of those requesting patients to board. The work of this branch of social service in an institution should permit of returning to the community many patients requiring a certain amount of supervision who, without this, would have to remain under institutional care.

V. CONNECTING NEEDY PERSONS WITH THE PROPER AGENCIES.

Frequently breadwinners and mothers of families become patients and leave dependent persons without means of support, illustrating the seriousness of ignoring the social factors in the cases admitted and considering the patient as an individual instead of a member of a family.

Case of R—— K——; male. The family history as obtained by the field worker shows that the patient's father was born in Hartford, Conn., and is supposed to be still living. He deserted his children following the death of his wife, after placing them in a Catholic home in Hartford. He has not been seen since that time. Mother, K—— B——, was born in Ireland. Died when the patient was an infant, cause unknown. There were four children, three girls and one boy, all of whom were placed in an orphanage in early life. The children were later placed in private homes, but present location is not known. Personal history shows that the patient was born in Hartford, Conn., Nov. 15, 1865, a Roman Catholic. He received a grammar school education on leaving the orphanage. At about sixteen years of age he went to work in Hartford, Conn., where he was employed in a wood shop, working until about twenty-three years of age. He then moved to Beverly, where he worked in a box factory. He later moved to Lynn and worked there as a carpenter. He has lived in Lynn for the past six years. He was married Feb. 22, 1889. Patient was twenty-four years of age when married, his wife was about twenty-

two years of age. Three children, all living. One daughter is somewhat nervous, and is rather backward in her school work. The patient's married life has been fairly happy until about two years ago, when he became very difficult to live with. The members of the family have been living in almost constant fear of him since the year 1913. He has had periodical nervous spells, occurring during the past six years, and at intervals of about one month. At these times the patient would become very irritable, restless and excited. In the winter of 1914 he fell from a team, striking the back of his head, injuring himself quite severely. Since that time he has been mentally upset. He has taken quantities of some patent medicine in the past five years for nervousness, but discontinued the use of this medicine about one year ago, losing faith in it. He has always been of a nervous, quick-tempered disposition, somewhat seclusive of late. Formerly he was quite social. He has been rather sensitive and easily irritated if watched while at work. He would become extremely nervous if orders were given him concerning his work. He could not hold a position longer than six or eight months during the past five years. During his early married life he used alcohol moderately, drinking only Saturday nights and Sundays. He is said never to have been intoxicated. He has been an excessive user of tobacco for several years. Onset of present psychosis is said to have occurred about the winter of 1914, following the injury to his head. Since that time he has developed delusions of persecution, thought his fellow workmen were plotting against him and that his persecutors followed him on the street. Has not been able to hold a position more than three months at a time. He feared to return from work alone, his wife being obliged to meet him and accompany him home every night for several weeks. He gradually developed ideas of infidelity against her; watched her constantly, and declared that unseen voices informed him of her immoral life. On several occasions he has attacked and struck his wife. He gave up work six months prior to commitment, because of the delusions of persecution and inability to concentrate his mind upon his work. He has remained much in the house, fearing to go outside. He declared that people followed him, plotting against him to kill him. He would sit at home, staring out of the window for hours at a time, then suddenly fly into a rage. Three months ago he attacked his wife and struck her, declaring his intention to kill her, after which proposing to kill himself. The patient became quite angry because his wife hid his razor, thereupon he stole her watch and refused to return it. He frequently attempted to obtain money to purchase a revolver. Talked of injuring the children, but never attacked them. A few weeks prior to commitment he attacked his wife, grabbing her by the throat, struck her in the face, breaking two of her teeth. He became very restless, refused to go to bed, would lie down with his clothing on. He refused food, declaring that his wife was trying to poison him. Two days prior to commitment he went to the police station and requested his wife's arrest on the charge of insanity and immorality.

Investigation of Home Conditions; Present Situation. — Family is at present without means of support. Situation appeared to demand attention, so investigation was made in addition to above history. Patient has a wife and three dependent children without visible means of support. Wife is nervously broken down and unable to work; she is about thirty-six years of age, rather stout and apparently good character. Seems to be of low order of intelligence, somewhat suspicious, but an excellent mother. She is very emotional, being unable to converse without weeping. States that on account of the anxiety of the last six months she is completely unbalanced, and physician has commanded her to discontinue work for several weeks. She is the main support of her family and is much worried over present situation of the family. Is willing to work and support children, but at present is physically unable to do so. Children: Mary, fourteen, in delicate health. Mother fears she is developing tuberculosis. Is undernourished, rather anæmic in appearance. Complains of general weakness and pain on the right side. Also complains of pain in the region of the heart. She finds it very difficult to learn in school. At present she wishes to leave school and assist with family support. Is undersized, wears eyeglasses, eyes are slightly turned. Inclined to be hysterical and very nervous. Helen, twelve years of age, average size, general appearance of good health. Apparently normal; is said to be an average scholar. John, eight years of age, attends school. Appears bright, is quite active, markedly interested in school. All children appear rather anæmic, assigned reason being that of lack of proper nourishment.

Resources. — Patient formerly earned between \$8 to \$12 a week, while he was employed. Wife earned \$7 a week at a shoe factory. At present the only income is \$3 received from the overseers of the poor of Lynn, this money to be used for food only. Relatives are poor and unable to assist family. Rent \$3.50 a week.

Home and Neighborhood. — Family live in the vicinity of East Lynn. Neighbors are largely American people of the middle class. A few Italian families are in the neighborhood. Houses are largely of the two-family tenement type. Sanitary conditions are fairly good.

Employment. — Patient was an unskilled workman, usually worked in the wood shop or as teamster. Nature of work required physical strength rather than intelligence. He frequently worked from eight to eleven hours a day. Wife has worked in a shoe factory for about five or six years. The husband's wages were insufficient to meet family needs.

Religion. — Patient is a Roman Catholic, not actively interested in religion. Has not attended church for several years. Wife is a Protestant. As husband manifested no interest in religion and expressed none in his children, family have attended the Friends Church.

General Statement. — Dr. M——, family physician, also city physician, was consulted as to the physical condition of patient's wife and family. He stated that she was suffering the reaction of long mental illness of

patient, and that the fear and anxiety of living with him caused her to be in an extremely nervous and exhausted condition. He states that she is unable to work and should rest for at least two months. Believes the family income is inadequate. Mrs. K—— is greatly worried over the present situation of the family, fears that they will be evicted from the house on account of the nonpayment of rent. She is also worried over the physical condition of Mary, eldest daughter.

Action taken. — Miss O——, secretary of the Associated Charities of Lynn, was interviewed, and a plan was arranged for patient's wife to have a few weeks' rest at the St. Luke's Convalescent Home, the children to be temporarily boarded. Fearing Mrs. K—— would worry more over the separation from her children, temporary aid will be given the family until such time as she is able to return to work. This will enable her to remain quietly at home with the children. Mary is to be examined at the tuberculosis clinic and treated accordingly. Relief will be administered until a permanent plan can be formed for the family. Visitor will keep in touch with the situation.

It occasionally becomes necessary to change a previous environment, especially where it has been considered a contributing factor in the causation of mental disease. The following illustrates the handling of such a case: —

Mrs. S——, about forty-five years of age, had married a man of low intelligence and of low standards of living and thought. She came of good family, possessed some natural traits of refinement and showed evidences of good breeding. The husband was not over-ambitious and did not adequately provide for his family of six children, necessitating the help of the wife who worked as waitress in a hotel. Mrs. S—— contracted the drink habit, partly through the generosity of her husband who frequently treated her; was often intoxicated. Two elder girls were at work, a boy of seventeen had but recently returned from a correctional institution; younger children were under no restraint; received no home or moral training and were showing evidences of waywardness. The home life was freely punctuated by quarrels; all were at odds with each other. Finally Mrs. S—— became mentally deranged through alcoholic indulgence and domestic friction; the family was divided against itself. There seemed no solution to the problem of proper home care; patient was determined in her decision not to return to her home because she believed that her home life was the cause of her breakdown. There seemed to be no common ground, and but poor material with which to reconstruct the family life. Three children under seventeen years of age were greatly in need of care and training. Efforts were made to interest patient in her home because of these children and for this reason alone would she consent to returning home. The members of the family were

interviewed separately and jointly and family affairs were freely discussed from every point of view. A plan was formed and agreed upon that the husband and father should fulfill his duty as became a man in that position; he and his adult children were to contribute to the family budget; the wife was to remain at home; quarrels were to be discontinued and harmony was to be restored. As the family lived in a most undesirable neighborhood, over a saloon of notorious reputation, in a locality of like reputation, they were advised or compelled to move into better quarters. Patient eventually returned to her new home; after a few days the social worker was notified that fresh mutiny had broken out and was requested to call. A visit resulted in a long friendly chat with patient who acknowledged her weakness, for she had again indulged in alcohol which alarmed the family. She was too weak morally to resist this temptation, and her priest was requested to aid in her restoration. At last accounts the home life was comparatively smooth. Patient is improving mentally and physically. This case will be noted as a purely social one; inadequate income, alcoholism, ignorance and bad housing were the social symptoms which required purely social readjustment.

VI. THE WEEKLY ATTENDANCE UPON OUT-PATIENT CLINICS.

Out-patient clinics were established in September, 1914, at the direction of the State Board of Insanity, in the large cities of the hospital district. The clinics are held in the evening in order that patients who are out on trial visit and who are at work need not lose any time in attendance. Notices are sent to all patients away from the hospital on trial visits who can easily report at the clinic in the city nearest their home. Notices are inserted in the newspapers calling attention to the clinics. The various charitable organizations and the physicians in the district are also notified in order that persons may be referred for examination and advice.

These out-patient clinics serve as a distinct aid to the after-care work of the social service department. If, for any reason, former patients do not report, the social service department investigates the reason immediately after the clinic. An opportunity is given relatives of patients in the hospitals to consult physicians. Quite a large number of persons visit the clinics voluntarily to consult regarding their own condition. The work of the out-patient clinics has been very satisfactory.

The work of the social service department during the last two and one-half years has demonstrated its value to both the hospital and community. As yet its value cannot be estimated financially in dollars and cents. As the work is now organized it

is believed that the department should be expanded and that we should have a head social service worker to direct the work, and that there should be four assistants, one to care for the boarding-out of patients and their supervision; one to give her time to the employment question, assisting patients in finding work, etc.; one assistant to do after-care work and systematic home visiting; and one worker to secure histories, both medical and social, of all patients admitted. A department so constituted would furnish the hospital with information, both medical and social, having to do with the sickness of our patients; it would undoubtedly permit of the return to the community of more patients, and would make the hospital the educational center for the community, inspiring such confidence that both the hospital and community could be of assistance to each other in working efficiently toward the abolition of the causes of distress.

It is believed that such a program offers much toward the solution of a problem that is increasingly making greater demands on the State for the care and treatment of the mentally sick.

The writer is indebted to Miss Hannah Curtis, in charge of the social service department, Danvers State Hospital, for the social service case reports.

THE BEHAVIOR OF THE WASSERMANN REACTION IN CASES RECEIVING MIXED TREATMENT.*

BY HARRY C. SOLOMON, M.D., OF BOSTON,

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DISEASES.

During the past three years it has been our custom to have a Wassermann reaction performed on the blood of all patients receiving antisyphilitic treatment each time an injection of salvarsan† is given. In this manner we have been able to follow any changes occurring in the reaction from week to week. During this period of time a large series of cases have been studied, many of whom have had sixty or more injections of salvarsan during a period of months. These patients fall into the groups called tertiary syphilis; latent syphilis; cerebrospinal syphilis; general paresis; tabes dorsalis and congenital syphilis. Frequent lumbar punctures have also been performed on the majority, so that it has been possible to follow not only the reaction in the blood serum, but also in the spinal fluid. An analysis of these findings brings out a number of points which have considerable significance in the clinical interpretation. It is to be borne in mind that none of these points are given because they are especially new, but rather because one is likely to forget the cautions which they indicate.

In the first place, as is well known, a negative Wassermann reaction in the blood serum is no proof that the patient is not suffering from syphilis. This is most conclusively shown, we believe, in those cases in which the spinal fluid gives a positive Wassermann reaction, and in which other signs indicative of syphilitic involvement of the nervous system are proved while the serum Wassermann reaction is negative. This finding has occurred in a number of our cases of general paresis and cerebrospinal syphilis, and hardly needs any case illustration. A very interesting case, somewhat similar to the rule mentioned, may be quoted, however. The patient, a man of forty-two years of age, acquired syphilis six years before coming to the hospital. He was vigorously treated, chiefly by mercury, from the period of infection until six months before being seen. At the end of about six years of treatment his Wassermann reaction in the blood

* From the Boston Psychopathic Hospital.

† Diarsenol and arsenobenzol have been used in many cases instead of salvarsan.

serum was reported negative on several occasions, and treatment was discontinued. Six months after discontinuance of treatment he began to show signs of mental disease: namely, memory loss; periods of confusion; peculiar actions; speech defect. The Wassermann reaction at this time was again found to be negative on three different tests made in three different laboratories. In spite of this, the diagnosis of general paresis was made, and this was apparently borne out by findings in the spinal fluid, in which a positive Wassermann was found. The patient was put on anti-syphilitic treatment, consisting of biweekly injections of salvarsan, 0.6 gram each; biweekly intramuscular injections of mercury salicylate, and potassium iodide by mouth. After four injections of salvarsan and mercury salicylate, and after having had four negative Wassermann reactions, the fifth Wassermann test was returned strongly positive; the sixth test, obtained at the time of the sixth injection, was weakly positive; the next four Wassermann reactions obtained at the time that intravenous injections were made were again returned negative, while the next reaction was positive, and since then a series of negative reactions have been obtained. Obviously, the negative reaction previously obtained in the blood serum did not mean that syphilis was no longer active in the body, as shown by the spinal fluid test, nor did it mean, as we learned, that a later test of the blood serum would not be positive.

At times a positive Wassermann reaction may be made negative by a very small amount of treatment. This is seen in certain cases of latent and tertiary syphilis, in which after as few as two or three injections of salvarsan the Wassermann reaction will become negative, and remain negative over a period of a good many months of observation. This same result occurs, as we have found, in certain cases of general paresis in which after a few injections of salvarsan a Wassermann reaction becomes negative in the blood serum; however, in these cases the reactions in the spinal fluid may be entirely unchanged. Thus we have learned that in the prognosis of cases of syphilis of the central nervous system the blood serum Wassermann test is of little value.

While the Wassermann reaction may become negative in the blood serum under treatment and remain negative, on the other hand, it may become positive again while treatment is being continued. An illustrative case is that of a man, thirty-two years of age, with the symptoms of general paresis, a positive blood and

spinal fluid. Variations in the Wassermann reaction may be indicated + for a positive, — for a negative. A test is taken at each injection of salvarsan, except where a zero is shown, which indicates that no test was made at this injection. The findings in the blood serum were as follows: —

+ + - 0 + - + - + + 0 + + - - - + - - -.

Numerous instances of this sort might be produced. In many of the cases, however, especially of those of syphilis of the central nervous system, we find no such fluctuation in the Wassermann reaction, which will remain positive despite the most vigorous treatment. Thus we can mention a case of neurosyphilis which was considered to be of the parietic type in which more than sixty injections of salvarsan produced not a single negative reaction. Again we have a case in which the Wassermann reaction remained consistently positive and only after fifty injections did it become negative, and has since remained negative. Similar findings are true in latent syphilis, not involving the nervous system, where we have been unable to obtain a negative Wassermann reaction despite more than thirty injections of salvarsan during a period of a number of months.

In contrast to the cases of neurosyphilis, in which the blood Wassermann reaction was made negative while the spinal fluid Wassermann reaction remained positive, we have cases in which the spinal fluid has become negative to the Wassermann test and other tests as well, while the blood serum has remained strongly positive, despite the most vigorous treatment. Thus in the case of a man of forty-nine years presenting the symptoms of cerebrospinal syphilis, the spinal fluid became entirely negative and all symptoms disappeared after fifteen injections of salvarsan, whereas the blood has remained persistently positive after thirty injections of salvarsan re-enforced by mercury and iodide. A similar result was obtained in a case diagnosed as general paresis. In this case after fifty-three injections of salvarsan the spinal fluid Wassermann reaction became negative while the blood remained positive; ten more injections were given in the following nine months and the blood has continued persistently positive.

These illustrations demonstrate that neither the Wassermann reaction in the blood serum nor in the spinal fluid taken alone is sufficient evidence to suggest a cure of syphilis. Nor does the fact that both the blood and spinal fluid are negative prove that a cure has been obtained. Thus, in the case of a printer, forty-

five years of age, who developed convulsions six months after his infection, and who had a positive blood and spinal fluid, both became negative under treatment, and have remained entirely negative, yet from time to time convulsions still occur, showing that we have not obtained a cure. Probably more convincing is the case of an inspector, forty-nine years of age, who was diagnosed both from mental, physical and laboratory symptoms as a case of general paresis, but who cleared up mentally under treatment, and whose laboratory tests all became negative. Despite the negative findings in this case, treatment was persevered in. However, the spinal fluid a few months later again gave a positive Wassermann reaction, as well as other tests, showing an inflammatory process, although the Wassermann reaction in the blood serum remained negative. In this case we see a Wassermann reaction in the spinal fluid become negative under treatment, then return to positive, although treatment is continued, and although the blood Wassermann reaction remains negative. This should teach us that the negative Wassermann reaction does not mean a cure.

Very similar results regarding the Wassermann reaction are found in cases of congenital syphilis under treatment. An illustration is the case of a boy seven years of age with a positive Wassermann reaction and signs of congenital syphilis. After many months of treatment the Wassermann reaction became negative, the treatment was discontinued for a period of a year and the Wassermann reaction was again found to be positive; after three injections of salvarsan it became negative. Having been taught in this case the fickleness of the Wassermann test, treatment was continued despite the negative reaction. After several treatments the Wassermann reaction again became positive, although treatment was being continued; again it became negative, and the patient is still under treatment.

The following schemata will illustrate the finding of the variation in the Wassermann reactions of cases in the different groups, all receiving treatment, in most instances the treatment being given once or twice a week, never less frequently than once in two weeks: —

GENERAL PARESIS.

- (1) Fifty positive reactions, no negatives obtained.
- (2) Fifty negative reactions, no positives obtained.
- (3) + - + - O + - + O + O + O + + - + - + O + + - +
+ - + + + - + + - + + + - +.
- (4) + + - + - + - + + + + - - - + - - - -.

CEREBROSPINAL SYPHILIS.

- (1) Thirty positive reactions, no negatives.
- (2) Twenty negative reactions, no positives.
- (3) + O + O O O + + + - + + - + - + - + - + - + - +
+ - + +.

TABES DORSALIS.

- (1) + + O - - - + O + + O + O + - + + + - +.

CONGENITAL SYPHILIS.

- (1) + + O O + O + + + O - - - - + - + - + + -.

SUMMARY.

1. A negative blood Wassermann reaction does not prove the nonexistence of syphilis in the individual; nor is this proved by several negative tests.

2. A negative blood Wassermann reaction may exist in the patient having a positive spinal fluid Wassermann reaction.

3. A negative blood Wassermann reaction may become positive after several injections of salvarsan, where one salvarsan had no such provocative action.

4. A positive Wassermann reaction in the blood serum may become negative after a very small amount of treatment.

5. In some cases very large amounts of salvarsan (60 injections) and mercury over a period of more than a year are insufficient to cause a Wassermann reaction to become negative.

6. The blood serum Wassermann reaction may become negative while the spinal fluid Wassermann reaction remains positive.

7. The spinal fluid Wassermann reaction may become negative while the blood serum Wassermann reaction remains positive.

8. Both blood and spinal fluid Wassermann reactions may become negative and then either may return positive, even though treatment is continued.

9. Similar variations in the reaction of the Wassermann test may be found in the various groups of syphilitic disease.

The cases on which the findings in this paper are based have been taken from tertiary syphilis; latent syphilis; cerebrospinal syphilis; general paresis; tabes dorsalis and congenital syphilis.

In conclusion we wish to emphasize the lesson we have learned by closely following the Wassermann reactions in the syphilitic cases under treatment: namely, that a variation in the Wasser-

mann reaction occurs very frequently, at one time negative and again positive, or that a number of negative reactions may be followed by positive reactions, although the patient continues under consistent intensive treatment. Our point is that one must be exceedingly careful in drawing conclusions from the Wassermann finding in cases under treatment, even though a number of negative reactions are obtained over a considerable period of time.

OCCUPATIONAL AND INDUSTRIAL THERAPY. HOW CAN THIS IMPORTANT BRANCH OF TREATMENT OF OUR MENTALLY ILL BE EXTENDED AND IMPROVED?

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In picking up the history of occupational work in our institutions for the insane, I have found nothing in medical literature that would even touch the researches of Dr. Hurd on the subject in his most complete and truly remarkable history of "The Institutional Care of the Insane in the United States and Canada." I confess to having abstracted bodily from this volume much of the historical matter used in this paper.

As early as 1847 Dr. Amariah Brigham, superintendent of the Utica Asylum, published a paper on "The Moral Treatment of Insanity," in which he took issue with Dr. Rush's then prevailing views on the treatment of the insane. The latter says, for instance, that "the first object of the physician when he enters the cell or chamber of the average person should be to catch his eye and look him out of countenance. He should hear with silence their rudeness or witty answers to his questions, and upon no account ever laugh with them or at them." After enumerating the various means of making insane persons obedient, Rush continues: "If these prove ineffectual to establish a government over deranged persons, recourse should be had to certain modes of coercion." Among the methods recommended are the straight-waistcoat, the tranquillizing chair, the deprivation of customary pleasant food and pouring cold water under the coat so that it may descend to the armpits. If these methods likewise failed to produce the desired effect, he regarded it as "proper to resort to the fear of death."

With these views of Dr. Rush's Brigham entirely disagrees. He regarded bodily labor as one of the measures necessary for the moral treatment of the insane, and he expressed the hope "that in the future arrangements will be made by which the inmates of insane institutions will be better able to avail themselves of this means of cure." He recommended in 1847 that every institution should have a farm connected with it, and that there should be workshops where "dressmaking, tailoring, basket-making, shoe-

making, painting, printing, bookbinding and other employments should be carried on by patients who could not be employed on the farm." Manual labor he considered beneficial because it engages the attention and directs the mind to new objects of thought, but feared that in some instances, especially in convalescence from acute diseases, it might do harm and produce mental excitement. He believed that manual labor was most useful with incurable patients, since by preserving the health and arresting the tendency to mental impairment, it rendered their condition more comfortable. With curable patients, on the other hand, he considered mental occupation more beneficial, especially employing the mind in pursuits which engaged the attention, suggested new objects of thought and enlarged and improved both the mental and moral powers.

Institutions, he thought, should be supplied with books, maps, scientific apparatus and collections in natural history. Schools should be established in every institution where patients could learn reading, writing, drawing, music, arithmetic, geography, history, philosophy and the natural sciences. These schools should be in charge of intelligent instructors who would give all their time to the patients, eating at the same table with them, joining in their walks and recreations, providing them with amusement, and undertaking no labor or duty except that of interesting those under their care, and contributing to their happiness by conversation and companionship. They ought not to have anything to do with coercive measures, in order that the patients should not be prejudiced against them and become ill at ease in their presence. They should encourage the timid, comfort the despondent, and contribute to the cheerfulness and contentment of all. He believed that schools are especially useful in arousing the patients and calling into exercise the faculties of the mind which had become dormant and inactive. While walking, riding, etc., soon became mechanical, and therefore furnished but limited enjoyment, attending school, he believed, provided mental occupation which, by requiring constant attention and effort, really interested the patient. Dr. Hurd says: "It is evident that Brigham, in this respect, was far in advance of his time, and possibly of any time."

How far have we carried out these ideas, and have we really made any further progress?

In the first number of the "American Journal of Insanity," the good Dr. Brigham describes efforts made to employ patients in

the State Lunatic Asylum at Utica, N. Y., which certainly seem, in some respects, to be far in advance of anything our hospitals are doing now. He says: "Attached to the asylum at Utica is an excellent farm, where the patients in good weather perform much labor, and also in the garden, by all of which they are much gratified and improved. Some work in the joiners' shops, some make and repair mattresses, and others work at making and mending shoes. The women make clothing and bedding, and do the ironing and assist in various household duties. They also manufacture many useful fancy articles for sale." He goes on to describe a fair that had been held a month before for the sale of articles manufactured by patients at the asylum, and quotes a passage from an article in a daily newspaper showing how everyone was surprised at the beauty of the fabrics, and the skill and ingenuity displayed in their manufacture. There were dolls of every dimension, baskets, caps, stockings, gloves, aprons, collars, bags, purses, etc., in abundance. Schools for both sexes had been established, at which good results had been obtained. The winter session of the school had been closed by an exhibition at which there had been given original pieces, recitations, music and original plays, which would not have been discreditable to any literary institution.

"Those who do not labor," says Dr. Brigham, "pass their time reading, playing ball, rolling ninepins, walking or attending school. The women work much of the time; they also take drives, walk, play battledore and attend school."

In the next number of the journal he gives a description of the school: "There are three schools for men, one managed wholly by a patient, the other two by a teacher hired for the purpose, and one school for women conducted by a hired teacher. School sessions commence at ten in the morning and at three in the afternoon, and each session continues for one hour. They are opened and closed by the singing of a hymn. The patients read, spell, answer questions in arithmetic, geography and history, and are assisted by blackboards and a globe. The majority commit pieces to memory, and once a week there is a meeting of all the schools in the chapel, where they unite in singing, which is followed by declamations, reading and compositions. Some patients have learned to read and write in these schools. Several who have been depressed have been much improved by attending school, and a considerable number who were approaching a demented state have been improved in mind and have become interested in learning."

In a later article Dr. Brigham describes what he calls "whittling schools," in which, "in addition to carved reproductions of all ordinary objects, such as houses, temples, ships, chains, etc., as well as all four-footed, two-legged and creeping things, there are many works of pure imagination, presenting marked characteristics of the *asylum school*!"

Dr. Hurd continues in his account of Dr. Brigham's work: "The theory held by Dr. Brigham and also by Dr. Todd of Hartford was that employment, to be of benefit to the patient, should not consider the question of gainful occupation. In their opinions it should be of a character to divert the patient from his morbid fancies, to engage his attention, stimulate his interest, and lead him to resume natural and healthy methods of thought and occupation. Hence Dr. Brigham advocated the establishment of the whittling shop mentioned above, and also made plans for a printing office and other industries in connection with his institution. He spoke repeatedly of the advantage of household occupations and gardening and flower raising for women, with labor upon the farm and garden for men. It will be observed that these schools were part of the hospital routine. As long as Dr. Brigham was superintendent, and during the superintendency of Dr. Benedict, his successor, they continued in operation. Under Dr. John P. Gray they were discontinued." Except for the addition of gymnastics, dancing, etc., and for the development of the more strictly artistic handicrafts, little seems to have been devised in any State hospitals in this country since Dr. Brigham's day in the way of diverting and occupying patients. Indeed we might do well to revive several of his devices, especially the well-conducted school and whittling classes. Considering that our hospitals are necessarily under the direction of medical men, it is not surprising that the pedagogic side of the treatment has been neglected; but with our wider present-day knowledge of abnormal psychology it must come once more to the fore. It is true that our medical men are not trained to conduct schools, nor have we, many of us, the scientific knowledge of occupational therapeutics. Why not put these matters in the hands of trained educators, under medical direction? It may even be possible in course of time to effect co-operation with boards of education along these lines.

In the meantime, some sort of occupational work is being done in all of our State hospitals, but the various branches of instruction are best carried on where the superintendent or one of his assistants has some particular hobby. Even the school idea is by no

means neglected. Dr. Eyman, of the Massillon State Hospital (Ohio) is quoted in Dr. Hurd's book as saying that, "During the past year (1915) a school has been in session at this hospital. Through private donation a sum of money was obtained to purchase the material, and under the direction of the superintendent, the work of construction was practically done by the patients." He then describes the building, and continues: "Two teachers are provided for the school, and about a hundred patients per day are in attendance. Three sessions are held daily, two for women and one for men. The subjects are oral arithmetic, reading and spelling. The patients, in addition, are encouraged to relate stories from their experience, bearing on whatever subject is under discussion. There are also spelling contests and special recitations and songs. Free-hand drawing and the study of German have been introduced and special classes in history and geography have been formed. It has been the aim of the superintendent of the hospital to make an appeal to the patients to recall and reproduce, as vividly as possible, their former school days, and to awaken and stimulate early associations, with the hope that the stream of thought may thus be brought back to a natural channel. An effort is made to vary the instruction and to give a sustained interest in the exercises. The questions and subjects are simple in character and the patients are encouraged to speak of the ideas which the lessons suggest to them. The last 20 or 30 minutes of each session are given to calisthenics in the gymnasium, beginning with a simple march to music and followed by a simple gymnastic drill, with definite commands and without apparatus. At the close of the drill the patients join in old-fashioned games like drop the handkerchief, London Bridge and fox and geese.

"With the development of non-restraint methods it became essential to supplement household duties by occupations and industries calculated to engross the attention of all classes of patients, acute as well as chronic.

"In some States a law exists whereby authority is given to medical officers of institutions to give employment to patients solely as a mode of treatment."

From time to time periodicals have been issued by patients in various institutions, beginning in the Hartford Retreat as early as 1837. In 1847 a regular newspaper, "The Asylum Journal," was issued by the patients of the Vermont Asylum for the Insane at Brattleboro. This continued successfully for five years, but was

discontinued on account of the recovery and discharge of the printers. Perhaps the most successful of such periodicals was the "Opal," issued from the Utica Asylum in the 50's. This paper had a large circulation and was very successful for some years, but gradually interest dwindled. We are told that the editor, the printer and the binder declined in mental power from the progress of disease and soon afterwards died. We may trust, however, that their deterioration was delayed by their activities. Dr. Hurd cites as one of the causes for the decline of this journal the recovery and discharge of some of the best contributors. He says in regard to these periodicals in general: "They prospered for a time owing to the industry and initiative of some one person who felt responsible for them, and ceased to exist when by recovery or otherwise the individual passed from the institution." Does not the very fact that these periodicals have been discontinued after a short period of enthusiasm indicate that they have accomplished their therapeutic purpose?

Therapeutic occupation for the mentally ill, and especially those who are patients in our State and private hospitals has not received the impetus that it should, considering that it is a recognized value of almost the greatest importance in the treatment of mental diseases. While therapeutic occupation for the blind, crippled and other handicapped individuals has made enormous strides the last few years, this form of treatment has made comparatively little progress in our institutions for the mentally ill. We might learn much from a study of the methods of Dr. Herbert J. Hall of Marblehead, who has done pioneer work in the development of occupation for nonmental cases. In a paper read by him in Boston, in 1914, in discussing the subject of special vocational schools for discharged patients from State hospitals, he says: —

"It seems to me that we are not ready for outside industries, because we have not yet made full use of the hospital opportunities for industrial or vocational training. The modern State hospital is a little industrial world. Almost all the trades, all the domestic occupations are carried on under its administration." He then cites the various necessary occupations to which patients are already being admitted, with undoubted benefit to themselves and to the hospitals, and continues: "This is a most gratifying situation, but I will venture to predict that it is only a very small beginning. Very much credit is due to the hospital superintendents and their assistants for their accomplishments so

far. With an especial force of industrial teachers, however, the labor of the patients could be much more efficiently used, with a greatly increased benefit both to the worker and to the State. It would be far too much to expect that with all their other duties the present nurses and assistants could find the right job for each patient and then get the best and the most efficient work accomplished. But here is a task which must be undertaken if we are to train our patients for successful life outside, or if we are to avail ourselves of the tremendous industrial possibilities latent in the wards of the State hospitals. Here is the opportunity for special industrial teachers — I do not mean teachers of arts and crafts, for the crafts are relatively a small matter and are being developed. I do mean teachers of high grade, whose business will be to study the individual patient, with the idea of making him highly efficient, not only while he is in the hospital, but later, in any industry which may be managed after his discharge. We shall be much more likely to succeed with outside industries if we have made careful vocational study of the individual, if we have tried him out and proved him under the protection of the institution."

I would heartily recommend Dr. Hall's books, written in conjunction with Miss Mertice M. C. Buck, entitled "The Work of Our Hands" and "Handicrafts for the Handicapped."

A comparison of statistics covering the work of a purely therapeutic nature done in a so-called up-to-date group of State hospitals two years ago with the work done at the present time shows very little increase in percentages of patients occupied. Ward work, including the care of rooms, kitchen and laundry, and farm work have increased, but this increase appears along the lines of industry and economics, rather than of therapeutics. Reports do not show that sufficient study is made of the therapeutic application of this work nor of its therapeutic results.

In how many of our State institutions in this country will you find more than a small percentage of the total number of patients being studied along the lines of vocational training and the determination of therapeutic occupation as a means of improvement or cure? To be sure there are classes in many of the hospitals where certain teachers instruct some patients in therapeutic occupation, but they constitute but a very small proportion of the total number of patients occupied in any hospital.

In the face of the recognized value of occupation as a remedial measure in this branch of medicine, and in the face of all that has

been written on this subject both in the magazines and in medical publications, it is appalling to go through the institutions for the mentally ill and see the great number of patients who are now as idle as they might have been fifty years ago, — many sitting on benches, others loafing about the grounds, and large numbers lying in bed day in and day out with nothing to do.

I know that it is a physical impossibility for superintendents and other members of the staff to set all of their patients to work at once, but every hospital should be so organized that there would be, in addition to expert teachers, a corps of instructors among the nurses and other employees who would in turn extend their knowledge to other nurses, and in addition they should be given a course in therapeutic occupation in the training schools, so that every graduate nurse would be able to carry out prescriptions written by the medical officer for this important branch of treatment. With such a force in the hospital, the medical officers should either themselves or through the creation of a new office, *i.e.*, vocational trainer, preferably with medical education, study the needs of every patient, that each one may have some occupation which will help in the treatment, to the end that they may not only be happier in the hospital, but, in many cases, less destructive, less depressed or less noisy, and, what is of great importance, if the patient is able to do something that is useful and of value as a therapeutic measure, he may continue the same occupation after his discharge.

Very often the mistake is made of laying too much stress upon the value of the product of labor of certain patients, because of their efficiency in certain directions before they came to the hospital. Too little attention is paid to the fact that in many instances it may have been that very occupation or employment which contributed to the breakdown; or, that the particular occupation or employment may be accompanied by ideas of environment or influence associated with the illness before coming to the hospital which it might be dangerous to revive. This, of course, is not always the fact, and it is not unusual to find that a patient is made much better by resuming his regular trade or occupation, especially if he finds he can do in the hospital what he was unable to do before coming there.

In hospitals where the percentage of occupation is high, restraint percentage is low, including seclusion and packs. In hospitals where the "open-door" treatment is in vogue, the percentage of restraint, seclusion and wet pack is extremely low or entirely

wanting. For example, at Sykesville, with a thousand patients under the open-door system, there is no restraint.

Members of the staffs of our hospitals, either State or private, should not allow a day to pass without having started one or more patients who had previously been idle, according to the population of the hospital, in occupational work. If a patient is only able to do one hour's continuous work in one kind of occupation in one day, then other forms of occupation should be prescribed after the physician has made a study of the particular case.

Dr. Fernald, in the school for the feeble-minded, has never been satisfied with one hour a day for any patient, and shifts those not capable of continuous effort in one direction from one occupation to another, until he has mastered the therapeutic needs of each of his patients along industrial or other occupational lines.

It would seem that enough has been written on the subject of this mode of treatment, but there evidently is something wanting, else our superintendents would not to-day have so many idle patients on their wards. The time has come when no superintendent should be satisfied with a table of occupations showing only 6 to 12 per cent who are really receiving occupational therapy, with 40 or even 50 per cent with industrial or economic occupation, many of them occupied only an hour or two hours a day, and with the other 30 or 40 per cent receiving little attention if they are bed patients, or, if violent or senile, only such attention as attendants are able to give them by walking them about for an hour or two in the whole twenty-four hours, and this walk confined to stereotyped paths or routes which occupy comparatively small space of the usually extensive grounds of the institution. Many patients in institutions of a thousand or more should be found who would make valuable teachers, and who would be able to do work under the direction of physicians, which would in itself be a therapeutic measure for them, and there might be a certain percentage of these teachers who might continue in the work after recovery. I hope to live to see the day when the ex-patients of the hospital will not be barred from employment in a hospital for the mentally ill. If their treatment has been what it ought to be, if their training in occupational or industrial work has been what it ought to be, instead of being cast out of the door forever when they leave the institution as "improved" or "recovered," certain of them ought to be among the most valuable employees, able intelligently to carry out the

instructions of the officers or other employees and to be of great service to their fellow-kind who have need of just the sort of sympathetic care and treatment that might be administered by these very persons under proper direction.

There are many professional teachers of therapeutic occupation now being developed for our general hospitals, and for our hospitals for the blind and crippled. It is not a credit to our alienists that we have allowed other branches of medicine to proceed so much more rapidly in this direction, with the comparatively small proportion of their cases needing this kind of therapeutics, than we have done, when almost every individual case requires the most intelligent and judicious administration. We were by many years the first to start, and we should have been the first to develop this branch of therapeutics, and should long ago have been able to supply the needs of the small units requiring such teaching.

A careful study made last year by the Massachusetts State Board of Insanity of the working capacities of the State institutions under their care shows that they had on June 1, 1916 (exclusive of patients boarded out), a total of 17,683 patients, and that the working capacities of the institutions at that date could have provided employment of some sort for 16,456 patients, that is, that we could have occupied 92.54 per cent of our patients, given a maximum of efficiency. Allowing for the number of patients too feeble or too demented to work, this would at first glance seem to be an adequate provision.

As to the use made of this provision, we find that on the same date there were actually occupied, for some fraction of the day, 13,016 patients. According to these figures, and judging *only by figures*, we are 80 per cent efficient. But an analysis of the different types of work actually being done leads one to a very different conclusion.

Excluding the schools for the feeble-minded, Tewksbury and Bridgewater, because a comparison of their figures with those of the State hospitals is hardly fair, we find that on June 1, 72.66 per cent of all patients are reported as occupied. Again allowing for those incapacitated, this seems like a fair showing; but, bearing in mind that the object of occupation in a *hospital* is admittedly therapeutic, let us inquire how far this idea is being carried out.

It is impossible to separate the different classes of work in any such report as this so as to distinguish the strictly therapeutic

work from the industrial or necessary work of the institution. Indeed there is no doubt that, with proper classification of workers and careful supervision, domestic and departmental work are very important branches of therapeutic treatment; but there is always the danger, especially under economic pressure and that of short-sighted utilitarian public opinion, of relapsing into the old institutional habit of getting our work done along the lines of the least resistance, without consideration of the individual patient's interest, allowing patients who are not helpful to the institution to relapse into habits of idleness which retard recovery in some and hasten deterioration in others, and, on the other hand, running the risk of overworking willing and industrious patients.

An analysis of the State hospital figures is interesting, though not conclusive. It is shown that an average of but 3.03 per cent of their population are occupied in shops and 8.94 per cent in the industrial rooms, making a total of 11.97 per cent of the patients in these more scientifically directed branches of occupation, under special trained teachers. We also find that many of these patients work but a very small part of the day, — 12.57 per cent work for one hour or less, and 29 per cent of all patients, or about 40 per cent of the total number occupied at all, are occupied only in ward work, which one suspects is of very little practical value to the patient as at present organized. For instance, an inquiry made by the State Board of Insanity last year to ascertain how many of the patients reported as occupied were merely engaged in swabbing and polishing floors showed that in the various institutions from 1.4 per cent to 14.4 per cent were reported as thus occupied. More or less of this class of work is done by patients in all State hospitals, but where it is the patient's sole employment, it can hardly be qualified as therapeutic, and in many instances it would seem to be dictated by laziness, ignorance or lack of initiative on the part of the nurse.

The Committee of Diversional Occupation of the American Medico-Psychological Association at Old Point Comfort in 1915 awarded "gold stars" to five Massachusetts hospitals on the following points: —

1. Having a director of occupational work with assistant teachers.
2. More than 50 per cent of unwilling workers occupied.
3. Industrial work as part of training course for nurses.
4. Industrial department as well as work on wards.

It is to be hoped that all of our hospitals are now fulfilling these outline requirements, though no just estimate of the efficiency of the work can be made in this way. It is quality as well as quantity that counts for real success, — we should not only ask how many patients are working, but how many patients are intelligently set to work for their own benefit.

Dr. Clara Barrus, in her most excellent textbook "Nursing the Insane," published as long ago as 1908, has a most excellent chapter on occupations. She says: "Nurses need to remember that new patients should not be set to work until their occupation is sanctioned in kind and degree by the physician. I hope the time will soon come when, in addition to the various industrial shops in vogue in some hospitals, there will be regular schools, where the truths in kindergarten methods will be made applicable to patients; courses of instruction adapted to the needs of various classes and conditions will help in upbuilding mental health. I wish to emphasize the necessity for individualization in the choice of occupation, the particular work being suited to a given patient and to the patient's existing condition. Never allow him to jog along from day to day in work which, though it may have been suited to him at one time, is now for any reason no longer adapted to his strength. Patients should be encouraged first of all to do all that they can to help themselves and then to do something each day to help others.

"Up to about 1880 restraint was generally used in this country, leading to much criticism from visitors from abroad who were familiar with the nonrestraint methods practised in English institutions; and from 1850 to 1880 scarcely a meeting of the Association of Superintendents of Institutions for the Insane was held in which the matter was not debated. It was evident that the opinion of the majority of superintendents was in favor of restraint, though an occasional voice was lifted against it.

"Wherever nonrestraint was adopted carefully and judiciously it promoted the comfort and well-being of the patient, but where nonrestraint was simply decreed without any attempt to furnish a substitute for it, it was found that the relation between the patient and the nurse became extremely unpleasant. The nurse, forbidden to use mechanical restraint, sometimes resorted to force and intimidation, which resulted in personal collisions between the patient and his nurses. Not a few of the earlier attempts at nonrestraint failed because of this failure to devise occupation for the patients."

That there is a close connection between the absolute abolishment of restraint, the introduction of therapeutic occupations and the higher morale of the nursing force of any institution for the mentally ill is self-evident to any student of the situation. I believe that no efficient work can be done in any one of these branches without affecting the others favorably, and it seems to me that all three points may well be attacked at once.

The more the drudgery of custodial care is diminished and the interest of teaching substituted, the better class of caretakers we shall attract and the fewer we shall need. It has been demonstrated that patients occupied in interesting work need less supervision. We might, therefore, well afford to pay for the higher type of service demanded rather than for a large force of custodians. The resultant economy in the prevention and cure of insanity can never be reckoned in dollars and cents, but it must surely result in a much smaller ratio of increase in hospital population, to say nothing of turning out self-respecting men and women rather than potential paupers.

I can most heartily recommend a recent book, "Occupation Therapy," by Dr. William Rush Dunton of the Sheppard and Enoch Pratt Hospital. Dr. Dunton deprecates the informal way in which most hospitals permit their nurses to learn what they can of the occupation of patients merely through observation. He says it is practically impossible for a nurse to gain knowledge of basic principles under these circumstances, and recommends a lecture or two early in the training to open her eyes to this very important branch of her work. He says we must "study carefully to learn what form of occupation is most suitable for our patient, and if no specific directions have been given by the physician, it is the duty of the nurse to do this. The primary purpose of occupation should be to divert the patient's attention from unpleasant subjects, as in the case of one depressed. Or, in a case of dementia præcox, where the patient is given to day-dreaming or so-called mental rumination, occupation is given to direct the patient's train of thought into more healthy channels. In a case of mild excitement, occupation will keep the patient's mind more continuously on one subject than is possible if he has not this stimulus to control his attention. In cases of marked excitement it is usually impossible to use occupation in treatment, which is usually directed toward securing rest; when convalescence is begun, occupation will be of value. In cases of dementia of various sorts the object may be to re-educate, to

train the patient to develop the mental processes by educating the hands, eyes, muscles, etc., just as is done in developing the child. Another purpose of occupation may be to give the patient a hobby, which may serve as a safety valve and render the recurrence of an attack less likely. Still another purpose, which is less often resorted to, is to give the patient a means of livelihood after leaving the hospital, it being deemed wise to give up the former vocation." "The *mechanism* by which a recovery is brought about has been the subject of considerable inquiry. It may be summed up by the word *substitution* or, if one prefers, *replacement*." Dr. Dunton continues: "The question of rewards is one concerning which it is desirable to have some accurate information, which the nurses can often obtain better than any one else. Do patients work with more interest if there is some prize offered? What form should this take, — should it be some tangible trifle, or should it be the granting of a privilege? These are but few of the questions which have been asked, and which have not yet been answered authoritatively."

It seems to me that any generalization as to payment or reward for therapeutic occupation should depend entirely upon the needs of the individual patient. Ordinarily the occupation should be so attractive to the patient that it would be its own reward. The performance of tasks useful to the institution is quite another question, and one which has never, I think, been thrashed out from the economic standpoint.

Dr. Mary Lawson Neff, to whom the State of Massachusetts owes much for the first year's effort at the organization and systematic development of occupational work, takes the reasonable point of view that because the patient is a more or less efficient worker, the State has no right to require from him full-time services. She holds that the State may have a right to demand half of each day's work as payment for his maintenance (though even this is a mooted question), but that he should certainly have the privilege of working for the other half of the day at something from which the benefit comes, directly or indirectly, to himself. Thus kitchen and laundry workers who work eight hours a day would be paid for half of each day's work, enabling them to continue contributing to the family support, even while in the institution, or to earn a little money for personal comforts not supplied by the hospital. But especially this idea of half a day's work would enable the hospital to give certain classes of working patients the benefit of vocational training for a part of

each day or to give them time to benefit by purely diversional work or play. Such a plan might mean a temporary readjustment of the State's budget, but in the end it would tend to contribute to a greater efficiency in the work accomplished, to a larger number of cures, less discontent among the workers, and perhaps to less pauperism among the families of the patients, and a quicker readjustment to industrial conditions among recovered patients.

Dr. Dunton recommends that "a record should be kept of the patient's attendance, manner of work, interest, etc., by the teacher of the particular class attended, and that these records should form a part of the patient's clinical history when discharged, as from them may be derived information of considerable value for the physician. It seems best that these should be in the form of frequent notes and comments, rather than a set form, as in the latter case much that may be of interest is lost." He refers to examples given by Miss Field in her paper on "The Effect of Occupation upon the Individual."

Dr. Neff's year of service in Massachusetts was full of interesting suggestions. Her first special undertaking was to develop an educational exhibit of patient's work. In this exhibition she included not only articles of interest in themselves, of which comparatively few were made at that time, but series of articles showing early and later attempts of patients, and some very pathetic things made from old bones, ravelings, bits of torn clothing, and waste material of all sorts, showing the desire of these people, even without encouragement or suitable material, to *make something* rather than sit all day idle, as was then the custom in some very *orderly* institutions. "The exhibits were selected for their educational value, in order to illustrate as far as practicable all the desirable activities that had actually been carried on in some institution. The articles were classified, labeled, mounted on cards, in booklets, and in other suitable ways, and formed into a logically developed whole. This exhibit required a great deal of time and labor, but seems to have accomplished even more than was expected of it. It was visited by considerably more than 2,000 hospital employees and visitors from outside the hospitals. About an equal number of patients were taken to see it. Representatives were sent to inspect the exhibit from the Russell Sage Foundation, from Clark University and from Wellesley College." The educational effects of this exhibition were widespread, and it is to be regretted that it was not preserved for its educational

and historic interest, which were in many respects greater than the recent exhibits of more artistic and more efficiently organized shop-work, which we enjoy rather for their intrinsic merit than for their therapeutic interest. Unless the matter is continually kept before our eyes, there is great danger of our losing sight of the fact that the patient is our first consideration, and that his cure is of more importance, even from an economic point of view, than the product of his industry.

I would recommend to all doctors in State hospitals Dr. Eyman's paper on "Institutional Stasis," read before the Medico-Psychological Association at Old Point Comfort, in May, 1915, to be read at least once a year, that, in spite of all discouragements, they may continue to bear in mind that no scientific work is final. Dr. Burgess, in discussing this paper, said: "Speaking from forty years' experience, I can say that the greatest trouble is that we think of great improvements we could make if we had the money, but unfortunately the money is not always forthcoming. That, however, should not deter us. The aim of the hospital should be progress. The institution that stands still might as well be wiped out."

Dr. Henry P. Frost of the Boston State Hospital, in a paper read at the same meeting, said that idleness certainly "breeds dementia and fosters the formation of untidy and destructive habits, as well as bad temper and violence. A program of occupation which stimulates the interest, replaces confusion with order, and gloom with good cheer, contributes to the cure of many, and cuts down the cost of supervision and maintenance is well worth the effort involved in its establishment." He continues: "The great value of occupation in the treatment of the insane is determined by its infinite variety, adaptable to innumerable individual tastes and capacities, its range from utmost simplicity to stimulating technical exaction, but above all its essential normality, constituting it, for these unfortunates, the natural passageway back to normal life. The diversional feature of the occupation needs to be emphasized in order to obtain the best therapeutic results."

After summing up the various ways in which the patient's work is of value to the institution, Dr. Frost adds: "A further very distinct benefit to the administration is to be noted in the better spirit which pervades the nursing staff when a régime of definite and interesting duties in connection with the industrial program replaces the drear routine of lolling and keeping an eye

on a ward full of restless, unhappy, dull and dirty demented." In giving the history of the development of this work in the Boston State Hospital, Dr. Frost adds: "After some success had been obtained in developing the interest and co-operation of the nursing staff and the more intelligent and willing patients, special attention was given to the training of the least intelligent class and to the introduction of safe and suitable occupations in the ward treatment of those with violent and dangerous tendencies, for it was felt that these were the larger and more important fields for really effective work."

In another very interesting and suggestive paper read at this conference, Dr. Britton D. Evans of the New Jersey State Hospital at Morris Plains and his assistant, Dr. Frank M. Mikels, say: "The form of work assigned should be consistent with therapeutic indications in each psychosis, the reactive effects should be carefully evaluated by a physician conversant with the régime of treatment, — it should not be left to the haphazard judgment of untrained nurses and attendants. Before work is assigned, a careful study should be made of the peculiar complexes of each psychosis, in order that the work prescribed will not militate against the improvement of the patient's mental condition. There is no system so vicious as that which relegates a patient with mental disease to the solitude of a custodial institution, and totally disregards the residual earning capacity of that individual." Again these authors say: "There are instances where the prescription of a certain kind of work to allay the distressing symptoms of a psychosis will actually entail a waste of material, but there is a compensation for this loss if the prescription of work takes the place of administering drugs, and ultimately there is an actual profit, if the patient eventually becomes a producer of articles which have a greater value than the loss of the materials which he used. . . . The value of this method of treatment is in direct ratio to the efficiency of the physicians and instructors, and their personal interest in this form of therapy."

Dr. Floyd Haviland advocates the systematization and organization of occupational and re-educational work through occupational schedules. He says that the best results from an occupation schedule are obtained when all work done in an institution is covered by it. "The ideal general schedule, however, not only provides for work done by patients, but also provides scheduled periods for rest, recreation and exercise."

Dr. Charles E. Thompson of the Gardner State Colony says: "The superintendent must have enthusiastic instructors in order to get results. It seems to me that this is the important thing — to stimulate rather than pay patients for work done."

One might continue quoting indefinitely from recognized authorities on this subject. The remarkable facts are that all are agreed as to its importance, and that all the forms of work and play suggested are in practical, successful operation in one or more of our State institutions. I should like to see a more thorough, systematic organization of this work in every State hospital; and especially I should like to see Dr. Brigham's school idea more generally revived in the light of modern educational knowledge.

Our State hospitals might well afford to maintain large "educational departments," under trained specialists, to which the majority of the patients should be referred as *pupils*, for mental, occupational and physical training, as prescribed by one or more experts in these lines. These departments should include not only our present occupational and industrial work, but should maintain school sessions, varied by physical culture, music, folk-dancing and other recreations, affording opportunities for the needs and tastes of each individual. Such work could not fail to be of extreme interest to the psychologist, and should furnish scientific material of great educational value.

THE PSYCHOPATHIC HOSPITAL IDEAL.*

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We have heard a great deal, first and last, of the psychopathic hospital *idea*, but only a very little concerning the psychopathic hospital *ideal*, and yet this is of fundamental importance as determining the value of the *idea*.

Broadly stated, the *ideal* of the psychopathic hospital must be *service*: service of a particular sort, but limited in its scope only by the limits of the field of abnormal mentality, in whatever way manifested. The opportunities for service are *medical*, *social* and *public*, to adopt Southard's triadic analysis of hospital problems.

The medical *service* has a number of potentialities. First, the patient must be carefully studied from every possible point of view. The patient (or family or friends) has the right to expect the most searching analysis that can be made. Accordingly, such analysis must begin with the study of the entire background of the person, — the family, the social and economic status, the past life of the patient, make-up, reactive possibilities, diseases, conduct disorders, — all of the manifold factors which have determined the activities of the individual. Then the *status præsens* of the patient — physical condition, nervous functions, mentality, and mental functioning — must be thoroughly gone into, using all the aids which modern medicine has devised (the laboratory, lumbar puncture, the Wassermann test, psychometrics) until the *whole* individual — static, dynamic, and potential — is understood. Only in this way can we avoid the pitfalls of diagnosis, render a reasonably correct prognosis, and decide upon treatment.

In this connection, a word about records of patients seems important. All records should be objective, and as nearly complete and accurate as circumstances will permit. The ideal should always be to record accurately, concisely and completely all that can be learned concerning the patient, leaving out personal interpretations. Stereotypy of records is very difficult to avoid, but it must always be remembered that each case is an individual, and so our records must vary somewhat. Care must be taken that all abnormalities are obtained and are correctly ascribed to

* Psychopathic Hospital Contribution.

their proper fields of mental activity. Records should be so objective and so complete, so analytic and so synthetic, that a later reader can get the facts without feeling everywhere the personality of the examiner.

An important part of medical service is research — experimental, laboratory, psychological, clinical, and pathological. Psychiatry as a science is yet young; the lines are *not* closely drawn; the possibilities are enormous. Only by much carefully conducted research can we hope to benefit those who are now mentally sick, or learn how so to order the reactive life of the mentally well that they shall not become mentally ill. Everywhere in the world is the search for causes: in science, in social life, even in the problems of war. Causes are what we must seek in psychiatry.

The psychopathic hospital service must be educationally applied to the medical profession, to medical students, and in a mutually reactive way to the State hospitals. That which we learn, if of value to us, is of equal value to the State hospitals, and we in turn should learn from them. The profession, as a whole, is rather ignorant of psychiatry. Each specialty claims the same thing, and this statement is often regarded as undeserved criticism, yet it is not so to be regarded. The peculiar conditions under which psychiatry must be practised have led to the condition. How fundamental it is that students and physicians learn more of normal and abnormal mental life, of the importance of early treatment, of guiding measures for those who are potentially abnormal! All such educational measures react to the ultimate benefit of the patients.

So it appears that the medical ideal is threefold in application: the study and treatment of the individual patient; research into nature, causes, diagnosis and treatment; education of the profession, — all aiming to serve the patient.

A threefold division of service also appears in its social ideal. Here the problem is one of study and adjustment of the mentally abnormal in some social position; in other words, it has to do with the individual patient. Now, each patient usually is the center or a part of a social situation involving a family. This family is likely to need medical care, aid, or some form of social adjustment. The ideal is to see that this is received in all cases where needed. Furthermore, patients may often occupy a fairly normal place in society if correctly guided and helped. In this field, which may be spoken of as the socializing of psychiatry,

lies the large opportunity of the immediate future, and this is the zone of effort and ideal of individual and group social service.

Finally, there is the great ideal of educating the *lay* public to the enormous importance of right living and thinking from the standpoint of mental hygiene; the pervading influence of the reactive possibilities of individual and crowd; the prevention of those diseases and excesses which may be destructive to normal mental life. The very foundation of this is the training of children: obtaining a correct physical and mental balance, proportioned activity, correct reactions.

The ideal of *public* service has to do with the medical and social service offered to courts, to educators, to various public and semi-public organizations in dealing with their human problems. More and more are judges, charitable organizations, etc., coming to see that problems of misconduct, poverty, etc., are very frequently problems of failure or abnormality of mental reactions, and they are realizing the value of careful psychiatric examination early, rather than late. This side of the socializing of psychiatry is advancing rapidly of late years. After all, how can corrective or helping measures be successfully applied if we do not know what we are correcting or aiding? Of what value is punishment to the feeble-minded or insane, or to the unadjusted victim of a morbid impulsion? These things can be determined only by examination. This part of the ideal is extremely important, and the ground it is rapidly gaining is one of the encouraging signs of the times.

So it appears that the ideal of the psychopathic hospital is the highest possible type of service medical, social and public in the interests of the mentally abnormal, either as individuals or as groups; the determination of causes, the care, treatment or adjustment; the protection of the individual or of society; the education of public and profession; in other words, making a broad and vital contact between psychiatry and society, to the benefit of both.

THE NEUROSIS OF THE HOUSEWIFE.

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The housewife whom I have in mind is poor, though she has her counterpart in well-to-do households. Likewise she is "born in Russia," and a Jewess, yet has Gentile sisters, whose ancestors came over in the Mayflower.

I have called her disease a neurosis, but there is no practising physician, and especially no hospital physician, who does not know her, for she passes from doctor to doctor, from clinic to clinic, looking for the aid she eloquently implores. By the time she is through one round of treatment she has probably had her eyes refracted, her septum straightened, her teeth pulled, had plates fitted to her feet, wears a pessary or has had a ventral suspension, can tell sodium bromide in any mixture, has had a dozen negative Wassermann tests, as well as a course in electrotherapeutics, hydrotherapeutics, absent treatment, and mental healing! It is easy to wax humorous about her, and to tell her "now there's nothing the matter with you, go home and forget it," but the cold fact remains that she breaks up nearly as many homes as alcohol, and is a focus of misery.

On the surface she carries a monotonous series of symptoms. Her complaints simmer down to pains and aches, paralgesic and paresthetic sensations. Headache, especially frontal and occipital, or a pressure, tired feeling in head; neck and shoulder ache; and also pains in the arms and hands; pain in the back; pain around the heart of a peculiar kind; numbness, and pins and needles feelings here and there, but especially in hands; hot flushes, cold flashes — any or all of these unilateral or bilateral. It is to be emphasized that these housewives complain more of pain than patients with organic disease, with syphilis of the nervous system, and that frequently there is a unilateral preponderance of pain and discomfort not to be traced to any organic disease. Moreover, dizziness is common, a moderate amount of nausea, especially at the sight of food, and fatigability enters into the syndrome as a sort of cement substance welding all the symptoms together into a monument of misery.

Now, while the pains, aches, fatigue, visceral disturbances, etc., are the difficulties which bring the housewife to the physician, the

neurologist finds no difficulty in bringing other and more fundamental symptoms to the surface. These less obvious symptoms are essentially changes in the mood and emotions, and are not easily defined. As will be shown later, they relate to serious difficulties in life adjustment, and are a sort of middle links between the pains and aches, and these conflicts.

First, the patient is evidently obsessed by *anxiety and fear*. She is intensely hypochondriacal as a matter of course: wants to know whether she has heart disease, lung trouble, fears that she may be going crazy, worries about oncoming paralysis, and watches her every bodily process with anxiety, and a brooding solicitude. This fear, as displayed towards herself, is also directed to her environmental and familial interests. Worries about finance, about the health of her children, their future, and that of the entire menage, with which she stands related, appear constantly in her mind. She "can't help worrying," *there is a feeling of absence of volition, of being a prey to gloomy association processes*, which in its turn alarms the patient. She feels as if her control over her mind were gone, and thus arises the fear of losing her mind.

Aside from these definitely ideated fears or worries there are unreasonable fears that sweep into her, episodically, apparently unrelated. She complains, then, of sudden sinking feelings, accompanied by palpitation of the heart, great weakness, hot flushes, and a fear, perhaps vague, filled in with an object. The object of fear in these latter cases is often associational, such as of heat (after being overcome in summer); of riding on the cars, or of automobiles (as after accidents); of sharp instruments (here the fear is of an impulsion to commit suicide, or to kill a "beloved" person, her child), etc. These fears are, of course, not essentially different from those found in other psychasthenic states.

Further than this, the helpless acceptance by her mind of disagreeable thoughts brings with it, in the extreme cases, a debate concerning her every act. Her occupation with her thoughts takes away the possibility of clear concerted planning and working, and the frequent mistakes, the little lapses in memory, the loss of time and inefficiency breed an *obsession of doubt* which makes the simplest decisions agonizing. Every neurologist is acquainted with these difficulties in decision, and they need not be here detailed. Sufficient to say that, in the extreme cases, they relate to her comings and goings, to everything from the

arrangement of the furniture to the cooking of the meals. This ambivalence, attended by a painful feeling of doubt, sometimes proceeds to the point where a dream-like state results. A sense of unreality arises, which is rarely absent in some degree in all cases, and which in a few cases makes the patient feel "as if I belonged to another world, nothing looks or feels real any more." What is here pointed out is that the obsessions of doubt, and the anxious restless states so often seen in housewives, at times reaching the point of a psychosis, differ from the milder cases where aches and pains predominate only in the emphasis and development of symptoms.

As important as the fears, the doubts, the sense of unreality, is a mood made up of *unenthusiasm*. The patient drags herself through her work, looks to each day's work as a martyrdom, loses her pride in her skill as a housewife. Even her love for her children may sink to the point where their main relation to her emotions is the care, the distress, the irritation they bring her. Her care for them, her care for her household, proceed out of a sense of duty, out of the pressure of her training and her past emotions, rather than from a willing spirit. This, too, disturbs her greatly. "Why do I feel this way; why can't I feel as I used to; what has made this change in me?" is her cry, for she has good insight, and is a very keen analyst and critic of herself.

It is not assumed that all these mood changes are present in full-fledged form in every case. They represent the type found in extreme cases, but are, however, present in varying degrees in practically every case. Where the depression is extreme, as in certain patients, there is this cardinal point of difference between it and that found in manic depressive, namely, that there is no retardation, and further a careful inquiry shows it to be distinctly ideational, and it is almost always very quickly improved by change of scene, *i.e.*, leaving the home.

Now there is a very curious relation between the aches and pains, and these moods. As one studies the cases intimately, gets to know them and their domestic affairs, it appears that in many instances the pains and aches appear, first, after quarrels; secondly, in the midst of disagreeable tasks; and thirdly, upon the occurrence of painful thoughts, such as the hypochondriacal fears, struggle against unfaithful thoughts, fear of pregnancy, in the midst of obsessive thoughts and doubts, etc. This subject will be considered further in another paper, and it becomes necessary at this point to pass from the symptoms to the internal

struggles, and general life conditions, of the patient, which for my purposes are assumed to be of cardinal importance in bringing about the neurosis. Not all of the factors are of equal importance, *e.g.*, in those cases amongst the well-to-do poverty in itself plays no part, and it is not assumed that predisposition plays no rôle. *In fact, it must exist, but its existence is not necessarily a stigma, it is often the mark of a personality not willing to accept odious conditions of living, yet not strong enough to change them.*

The neurosis is usually not of much importance until about the fifth or sixth year of married life. Truly enough, it has its inception with the very first day of union, with the first disillusion, with the first neglect, the first serious quarrel. Also the abrupt change from ante-nuptial conditions to the home conditions operate disastrously in the case of those who have previously been neurasthenic, and rapidly bring on the neurosis. But, in general, the women presenting themselves in clinics for the first time are either in the late twenties, or the early thirties, are the mothers of three, four or more children, and have been married for some time.

THE FACTORS IN THE DEVELOPMENT OF THE NEUROSIS.

1. *The Monotony and Confining Nature of Housework.* — Where a woman has to do all of her own work, *i.e.*, the washing, ironing, scrubbing of floors, as well as cooking, cleaning and general household duties, she is doing far more than the average servant is willing to do. Add to this, that the work is lonely, that in most of its details it is conceded to belong to the servant type of work, that it confines one to the same scene from morning to night, without even the mild exhilaration and excitement of a trip to and from work, and a fairly active, aspiring mind falls into introspection and phantasy building that becomes almost intolerable to the sane resistant personality. For while certain types of personalities fall easily into an autistic life, the ordinary mind becomes disgusted and rebellious under conditions that foster such thinking. These difficulties would largely vanish if the husband brought sympathy, understanding and distraction to the wife. But by this time sympathy and understanding have largely disappeared, and at night the husband retires into his own world, leaving the wife to hers.

Nor must the care of small children, especially where there has been fairly rapid childbearing, be forgotten as a factor in the

development of the neurosis. The impairment of physical beauty, and the natural regret therefor, the broken sleep, and also the petty irritation and the mental fatigue incident to the constant coping with the caprices of little children, break down endurance and fortitude. The average American woman of means finds even the care of one or two children, with the aid of a maid, difficult; and yet the American physician finds it difficult to understand just why the care of three or four children, plus housework in every detail, plus poverty, breaks down the women who come to his clinic. It must be remembered that even the poor vary in their capacity for endurance, and that amongst the humblest there are many who find their conditions of life unendurable, *especially because of their awareness of better conditions.*

But the monotony and confining nature of housework have other than psychical effects on the housewife. Irregular habits of eating — largely because the appetite suffers (many a woman hates to eat what she herself cooks) — bring about constipation. There is a general atony developed through lack of recreation, lack of fresh air and out-of-door exercise. The housewife I have in mind is by necessity an indoor body, and a train of attendant evils follow because of her sedentary habits. These in turn breed a depressed and unhappy mood, make her cross, irritable, weary, and widen the breach between her and the husband, who wonders why housework should make women so unreasonable and complaining. One might paraphrase the old saying which drolly puts it "If husband and wife bore children alternately and the husband had the first there never would be a third," into "If husband and wife took care of the house alternate months and the husband had the first month, the third would find the family in a tent."

2. *Effect of Poverty.* — Leaving aside the physical effects of poverty, for the housewife I have in mind is usually not undernourished, is kept warm in winter, and has sufficient clothing, there are other effects which are essential in the development of a neurosis. Most women of the class I have studied, Jewish women, have hopes when they marry for at least moderate wealth. As time goes on and the husband still remains poor, or has failed in ventures to get rich, or displays no ability to get on, is still a poor, struggling tailor on the ragged edge of charity, or a small business man who makes less than a laborer, the state of mind of the wife gets hopeless. She sees "a wall closing in," "a road with old age and charity ahead," "a never ending burden of

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hard work and no recreation," and an anxious rebellious spirit results. Now not all poor women look ahead, not all feel keenly being deprived of the nicer things, not all are ambitious or proud or envious of successful friends, — those who are and remain poor are predisposed to the neurosis of the housewife.

3. *Relation to the Husband; the Love Question generally.* — This seems to me to be the nucleus of the problem relating to the neurosis. The home, as a segregated social unit, is built up on the stability of the feeling between a man and woman. Originally, so we are told, a sort of property institution in which wife and children were the chattels, the form of the household has remained unaltered while the spirit has changed. The rise of woman to something like equality has brought into view the belief that man and woman enter into a partnership in marriage, that love gives the sexual relation sanction and sanctity, and that there is to be a community of interests and sympathies. Woman takes a pride in the married state as the hallmark of success, and to the normal woman the husband is the Man, with connotations of strength, sex-vigor and ability. To be one with the man is thrilling to a woman; it makes her willing to endure childbirth, housework and all, though her spirit may rebel, and she may feel herself meant for better things.

Now in the married state as it brings about a neurosis in certain housewives there are several rifts within the lute: —

(a) There may be conflict from the start as to who is to rule. "Having their own way" is an aim and an end in itself for many people, men and women. Indeed in all humans the will to power asserts itself early, and is a directing force in the development of the personality. Its balking under the circumstances of married life may dwarf and disintegrate the personality. The henpecked, beaten husband has his refuge in an outside world, but for the thwarted housewife there is no escape. The whole house reminds her of her defeat; if she loves her husband the situation is tolerable, but with the creeping in of disaffection, distaste or disgust, it becomes intolerable. With bold, determined natures separation or divorce results, with less hardy women, more bound by fear of social attitude or general consequences, *a seesaw of emotion results*, manifested by irritability, fatigability, and indecision and ambivalence extending in many directions.

The conflict may rage about any or many points. It may concern the location of the home, the kind of furniture, the bringing up of the children, the question of entering into business, the

frequency of intercourse (later considered), the money spent upon personal adornment, the drinking of the husband, his attentions to other women, — the whole wide range of the plans and details of life may be the issue. As in all quarrels it is not the importance of the matter but the worth it has to the pride and sense of personality of the belligerents that counts. Moreover, as is universally known, the weapons of women in their battles with men are often indirect, and are wielded with a sense of winning through weakness, through “bringing about an acute discomfort in the man, by appealing to his sense of shame and his ingrained dislike of tears, scenes, etc.” So we have here a potent factor in the neurosis of the housewife — the will to victory or power through pain and suffering, *i.e.*, through the symptoms. Thus the headache, the backache, the fatigue are witnesses against the husband, a sort of “see what you have done,” a parade to be compared to the horrors that haunt the guilty, acute spurs to his conscience. This method of battle is not peculiar to woman; it finds its expression in many social traits and customs, but it is frequently the weapon of choice in women and children, *i.e.*, in those unable to win by more direct and more open means.

While power and obstinacy on the part of a man are forgivable by a woman if he is successful in his dealings with the world, *i.e.*, can give her the things she wants in station, social glory, ease and luxury, it is entirely another matter when he remains poor and humble, and she is condemned thereby to hard work, poor clothes, monotony, secondary station. For usually she has in mind some man who might have given her what she wants, or some woman, friend, relative or acquaintance, who has what she wants. With the entrance of disrespect (conscious or unconscious) comes real bitterness, aided and abetted by a gnawing envy of others, a potential disloyalty to the husband.

(b) Around the sex life itself a great deal of difficulty centers. It is to be remembered that the normal sexual appetite is a very variable matter. There are men and women to whom intercourse needs only be occasional, and others who for many years require or demand daily gratification. At once there is a ground of discontent if a disharmony exists between the partners in their needs and power. For the woman this may mean a humiliating subjugation to the will of the man, or else dissatisfaction with his relative impotence. So fundamental a link between the marital partners is satisfactory sex life that many a woman clings to an unworthy mate because he happens to have desire that coincides

with hers, and conversely it takes great love to overcome the handicap of non-adjustable sex needs and powers.

Wrapped up with this is a development of recent years. After the first two or three children many women develop a genuine fear neurosis as they await each menstrual period, the *fear of pregnancy*. To many a poor woman, overburdened with work, unable to give the existent children what she desires them to have, to whom another child in prospect seems a great calamity, each intercourse is a perilous adventure, which finally is regarded not worth the risk that is involved. Finally a sort of rape complex is developed, because under such circumstances possession of the woman *seems to her a violation of that central matter in personality, the feeling of personal dignity and worth*. Yet somehow she has come to the belief that intercourse is essential to the health of a man, and there then arises a sharp divergence between what she feels is her duty and her own desires, or rather lack of desire. Moreover, it must not be forgotten that the frigidity is in itself the result of a conflict, and is as much fear and resistance to desire as anything.

Contraceptive measures only partly remedy this, and indeed bring about a new set of problems. To hedge around the sexual act with precautions takes away all pleasure in it, for some people, and indeed brings about disgust. *That there is a physical, a vasomotor, a sympathetic disturbance in tension without discharge, in excitement without orgasm, is undoubtedly true, but added to this is emotional disturbance of the type indicated.*

These things snap the sexual link that unites the man and woman, the husband and the housewife under consideration, or rather wear it away. Love may still remain despite all this; but it is a sadly crippled love, for sexual indifference easily permeates the whole field of domestic life.

We approach now the emotional or psychological crux of the matter. The thoroughly selfish woman, the worthless type, seeks satisfaction elsewhere, in her own pleasure one way or another. The strong woman adjusts herself to her difficulties, bears her burdens bravely, finds her husband's real worth, and loves him for that. The peasant type, without expectations or foresight, is contented that she has a home, a husband and children, and never understands why any woman should want more than these. But a large group *have more feeling than capacity for adjustment*. Monotony, hard work, poverty, and a too earthly husband bring about a neurosis, one of whose chief symptoms, a deep funda-

mental symptom, is an *inability to know how to act*. *They cannot accept nor can they reject their life conditions*. One of the fundamental needs of the human being is a fixed viewpoint, or a settled attitude toward persons or things. We are all ill at ease, uncomfortable, in the presence of people toward whom we have not adopted a definite social attitude. The man or woman who persists in intimate revelations when we decree conventional conversations, annoys us, and we avoid him or her as the plague. So this housewife, unsettled in her attitude toward her home and husband, wishing to do her duty, yet afflicted with distaste and fatigue, suffers. Her reaction in large part, at least, is the neurosis itself with its intermingled and interrelated physical and psychical manifestations. But in the background of the neurosis is a doubt, a sort of ambivalence, which disintegrates in a subtle way the functions of mind and body. This disintegration is not that of dementia præcox, for it is emotion — provocative and attended by fear.

It is beyond the point to argue that many housewives are subjected to these same conditions and do not react with a neurosis, and that some housewives with the neurosis do not have these life conditions. As to the first point it is like saying that all syphilitics do not get general paresis, therefore syphilis is not the cause of general paresis. We are not yet ready to apply a rigorous logic to medicine, or to anything else for that matter. Certain syphilitics get general paresis, but just why we do not know. Certain housewives get the housewife's neurosis, and perhaps more than we suspect are afflicted. *It is a disease of matrimony, a state which is excellent for the race, but rather hard on many individuals*. To call these individuals neuropathic is to use a label for ignorance. In fact many of my patients have a history of a normal girlhood. And further, when one realizes what life offers some people, especially women, one wonders why more neuroses do not result. Undoubtedly, a native temperament is at bottom, but intrinsically this temperament is a good one, but merely not adapted for a very hard, unsatisfactory sort of life.

Since this is not essentially a formal medical paper it is not necessary to go into detail in therapeutics. At bottom the home and the patient's reaction thereto are involved as causative. A detailed understanding of the home is of value, and social service has a very proper, non-charity field in introducing better housekeeping, labor-saving devices, new interests, etc. Removal

to another neighborhood sometimes acts as a tonic. *If the home can be changed, there is the keynote of therapeutics, if not, then it is better to lay emphasis elsewhere, since a counsel of impossibilities only depresses.* One must then raise the mood of the patient by physical agencies, *i.e.*, by drugs, hydrotherapy, massage, rest, etc. But above all it is very valuable slowly and carefully to adjust the patient to her home as it is, to purge her of useless rebellion, and vain aspirations. Here a knowledge of the patient is the first essential, and individual psychotherapeutics indispensable; *and sometimes the greatest good is done by a simple straightforward talk with the husband.*

"'Tis not sound understanding to judge us simply by our outward action; we must penetrate the very soul, and there discover by what springs the motion is guided," says Montaigne, "but that being a high and hazardous undertaking I could wish that fewer would attempt it."

If one adds to the above that this paper represents an attempt made to understand both women and disease, two difficult fields of inquiry, then perhaps none should have attempted it. However that may be, I feel that the physician who approaches the problem of the nervous housewife in a spirit of thorough inquiry will learn something himself, and, what is more, will be able to help his patient.

THE DIAGNOSIS OF ACUTE PSYCHOTIC CONDITIONS.*

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In these days of stress and strain, of sudden trials, and hurried adaptations to new conditions, the importance of the early recognition of psychotic or mental symptoms cannot be overemphasized. Recognition of psychotic symptoms demands first of all a clear understanding of what is meant by psychotic or mental symptoms as distinguished from neurotic symptoms. Moreover, it must be recognized that mental diseases are not necessarily insanities, as the question of sanity or insanity is a matter of legal determination dependent upon conduct in a given environment.

Recently acquired knowledge in physiology has thrown considerable light upon the behavior of the body in response to emotional stimuli. It has been noted that when an individual is adequately stimulated through emotional channels, such as through fear, there are definite physiological reactions, such as change in pulse rate and blood pressure, increase of sugar content in the blood, a halting of gastrointestinal activity, etc. These physiological activities roused by fear are activities that prepare the body for fight or flight, and follow ingrained types of reaction that far antedate our present stage of civilization.

In diagnosis, a distinction is drawn between signs and symptoms, and greater confidence is usually placed upon the former than the latter. Pain in the region of the appendix is usually less significant than localized spasm of the belly wall in the right lower quadrant of the abdomen; a lump in the breast needs attention even if symptomless. Moreover, signs that cannot be simulated by voluntary action are more significant than signs that may exist at the patient's conscious or unconscious volition. A wasted biceps or an ankylosed elbow is more significant than an elbow that a patient says he cannot flex; a pupil that does not react to light is more significant than an eyelid that a patient says he cannot raise. Consequently it is rightly felt that laboratory findings, and signs involving the involuntary nervous system, are more trustworthy and dependable than symptoms and signs involving the voluntary nervous system.

* A contribution of the Massachusetts Commission on Mental Diseases, series of 1918.

Relatively few psychiatrists have had wide experience in general medicine, and relatively few general practitioners have opportunity to study carefully many cases of mental disease. But those who have had such a double opportunity are struck by the failure of the psychotic individual to react physiologically as he normally should. The story is told of a man who met an idiot, and when asked how he knew that the individual was an idiot, replied, "Because he scratched where he didn't itch." Now if this clew to a psychotic condition is followed, what is to be found? In the various psychotic conditions, whether feeble-mindedness, dementia præcox, manic-depressive insanity, senility, acute manias from somatic disease, alcohol and drug psychoses, epileptic insanity, or general paresis, affectivity changes are recognized as a sign seldom if ever lacking; and by affectivity changes is meant that abnormal conditions exist in the emotional field of mental activity.

Osler, in his "Practice of Medicine," gives little or no clew to aid in the recognition of psychoses as they occur in somatic diseases. But experienced general practitioners tell one to look out for a typhoid patient when, in the course of his fever, he seems suddenly abnormally calm and comfortable, quiet, alert, regardless of the physical weakness that he normally should show. When a cardiac case suddenly, in spite of swollen limbs and laboring heart, can climb out of bed and run down the corridor, or when a post-pneumonic case suddenly becomes alarmingly active, a maniacal condition is readily recognized. But after a patient has jumped out of a window, or some other tragedy has happened, the diagnosis is somewhat tardy.

Occasionally, memory failure gives rise to acute trouble, but rarely. Sometimes intellectual aberration, as in paranoid cases, causes difficulty. But memory and intellect seldom initiate action. Politicians and all leaders in peace and war realize that the emotions are the mainsprings of action. And it is through action or conduct that judgments are largely formed of a person's sanity. Consequently, observation of an individual's emotional activity is of prime importance in forecasting his action, and emotional activity includes the physiological reaction to the emotions.

When emotional stimuli produce excessive physiological reactions, an individual is commonly considered "emotional," or "nervous," especially if the reaction is shown in activities largely

under voluntary control. When emotional stimuli produce normal physiological reactions with more or less inhibition of reaction in activities under voluntary control, an individual is considered "calm," "well-balanced." But when adequate emotional stimuli fail to produce adequate physiological reactions, a more serious condition exists.

The alcoholic who cannot sleep or eat or rest because he is "seeing things," is to be sharply differentiated from the post-alcoholic who sleeps and eats and sits quietly, and calmly tells you he hears somebody calling him vile names. The one is reacting, the other failing to react as is to be expected. The general paretic who thinks that a lumbar puncture is wonderfully good treatment, is in a different class from the ordinary syphilitic who has a sore back and headache from such procedure. The depressed individual who tells you how his business is ruined, and yet asks for a third helping of French fried potatoes, almost between sobs, is not to be classed with the fatigued person, who is losing weight and sleep, and has no appetite when worried over business affairs. The nurse who faints away and is carried out of a burning dormitory is possibly more normal in her reaction than the feeble-minded children that march out with as little confusion as if going to dinner. The senile dement, who can be dressed only with the combined efforts of several nurses, has strength and endurance that many of equal age long in vain to possess. In short, psychotic individuals fail to react as they normally should to emotional stimuli. Just as when a tap below the patella fails to elicit the physiological reflex, we look for an explanation of this possibly broken reflex arc, so when an individual in response to adequate emotional stimuli fails to show the normal physiological reflex which should normally be expressed through the vegetative nervous system, we should most certainly seek an explanation; for the individual who has ceased to react normally to his feelings is like an automobile with broken steering gear. Not only may the wheel fail to show which way the machine is headed, but even when the steering wheel is turned, the machine may run in an unintended direction.

Here is a symptom of mental abnormality that should be far more widely recognized, — not that such a symptom means impending or existent insanity, but that recognition of such a symptom, and an attempt at relief through lessening of emotional strain, may often avert more serious conditions. When the old

cease to be fatigued under exertions as elderly people should; when the overworked business man or military officer ceases to feel tired and wants less sleep, less food, and more work; when the weak typhoid wants to be up and engage in unusual activities; when an alcoholic listens with a normal pulse to insulting voices that no one else can hear; then is the time to recognize an impending or existent psychotic condition, and take steps to see that the individual and society are properly protected from possible harm.

SHELL-SHOCK ANALOGUES: NEUROSES IN CIVIL LIFE HAVING A SUDDEN OR CRITICAL ORIGIN.

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The great number of cases of nervous and mental disorder among soldiers, produced by the frightful conditions and strain of this war, has brought into sudden prominence a form of disease which has heretofore received relatively little sympathetic attention and for the treatment of which scanty provision has been made. The term "shell-shock" arouses public interest and concern, while analogous conditions in civil life popularly known as hysteria, neurasthenia, psychoneurosis or insanity are apt to receive but little sympathy and patience and indeed often to be shunned. The average layman shrinks from recognition of any form of nervous or mental disease as peculiarly depressing, vaguely fearing that the contemplation of such conditions may have a morbid effect upon his own mentality; while he will frankly consider any form of physical disease however terrible in its manifestations. We cannot, however, avert our attention from the soldier whose lot it has been to suffer shell-shock, for he claims the same regard that goes to the man who has been wounded or crippled in doing his part in our common great endeavor.

The considerations that strike the psychiatric social worker in this situation are, first, the desire that this new, widespread knowledge of the neuroses that war is making prominent may be turned to the advantage and relief of civilians who suffer from similar troubles and receive inadequate consideration; second, that experience in the social care of civil cases of similar nature may be used to advantage in restoring soldiers suffering from shell-shock to normal social condition; third, that a thorough, intelligent public understanding of these disorders should be established against the day when the soldier who suffered shell-shock shall have again become a civilian, and the cause of his trouble may not be remembered acutely enough to arouse sympathy for symptoms that still persist. Though the literature of shell-shock leads us to hope that in the majority of cases, with adequate treatment, complete recovery may be expected, there will probably be cases in which some of the symptoms of the original disorder will continue or will recur under strain or shock. It must be remembered that many of the soldiers who succumb

to mental disease in the army are men who would have suffered similar disorders if subjected to some exciting cause in civil life. The medical literature indicates that not all cases of shell-shock occur in individuals of neuropathic constitution, but certainly a great many of them do, and the proportions of the groups are not yet known. Instances of severe nervous and mental symptoms after shock in civilians with no neuropathic history, on the other hand, are known.

The term shell-shock has come to be used for a large group of mental conditions arising in the course of military service. It may, perhaps, be best explained by the following quotation from Smith and Pear:¹ —

Although the term shell-shock has been applied to a group of affections, many of which cannot strictly be designated as "shock," and into the causation of which the effect of the explosion of shells is merely one of many exciting factors, this term has now come to possess a more or less definite significance in official documents and in current conversation. It is for this reason that we have chosen to use it rather than the more satisfactory, but less widely employed term, "war-strain." The reader will, therefore, understand that whenever the term shell-shock appears in these pages, it is to be understood as a popular but inadequate title for all those mental effects of war experience which are sufficient to incapacitate a man from the performance of his military duties.

The trouble may occur while the soldier is in the training camp, or in another man there may be no sign of such disorder until after several years of service. One man may succumb from apprehension at draft, while another may survive unthinkable horrors at the front. The proportions of this form of disease are indicated by the Canadian figures, which show fully one-tenth of invalid soldiers to be suffering from shell-shock.

The analogues of shell-shock in civil life appear frequently at the psychopathic hospital. The range of exciting causes is from trivial incidents, such as a quarrel or reprimand, to a profound shock, such as an accident in which the patient is severely injured and a companion killed. The severity of the symptoms is not proportioned to the importance of the cause; and treatment should be relative to the gravity of the disease and not to the intrinsic nature of the strain or shock that induced the condition. In medical practice this is the rule, — the patient suffering from neurosyphilis contracted in the course of a life of self-indulgence receives as careful medical treatment as the wife or

child innocently infected; the soldier who loyally answers the draft call and at once develops mental symptoms in camp will receive the same consideration from the physician as the case sent back from the front. But social treatment is inclined to a measure of care and attention based upon the cause rather than upon the disease; and in this respect it should be brought to conform to medical practice, in the effort to adjust to social life persons suffering from neuroses either of war or civil life.

The civilian who suffers from mental disorder not severe enough to necessitate confinement in a hospital for mental diseases, especially one of those conditions that are known by the general name of psychoneurosis, or by the war term, shell-shock, finds, as a rule, little understanding among his family and entourage and few facilities for cure in the community. Even when there is much petting and indulgence, there is apt to be an undertone of impatience, a feeling that the patient could do otherwise if he would, that he exaggerates, that he would be all right if he would only stop worrying, or that the trouble occurred so long ago that he ought to have forgotten it by this time; or that he brought the trouble on himself, and he ought to see it and "buck up"; and so on through a gamut of misunderstanding which the unfortunate patient in his debilitated state, and with poor insight into his condition, is not able to withstand. And so he finds his sufferings increased by kindness or harshness as the case may be. Increased facilities for medical care of these cases is the obvious conclusion, and physicians for years have clamored for hospitals for psychoneuroses, that would be readily accessible to persons of small means and to those unable to pay. Many patients discharged to the social service from the psychopathic hospital, while they would not be benefited by further stay in the hospital, are not fit to resume their home responsibilities, but require an interim of medical care, in what our director, Dr. Southard, aptly calls a halfway house, where they may have the freedom of the community, occupation, a regulated routine life, and be understood. The ordinary convalescent homes cannot receive these cases, for they are not familiar with them and cannot prevent their annoying other patients. In Case XI, given below, the patient was refused at one convalescent home, but was fortunate enough to be received at a smaller one, where an exceptionally wise matron was able to give her a great deal of attention, with the result that the patient, who was in a precarious state, was cured.

Since the value of social work as an aid in the recovery of conditions analogous to shell-shock has been amply demonstrated in the hospitals of this country, it seems altogether likely that the same agency will be used in the after-care of soldiers, when they are ready to be discharged from the hospitals and to return to civil life. The soldier who from the day of his enlistment has had every part of his life ordered and regulated for him, who up to the day of his discharge from the hospital has been for months or years under a régime which met his needs and took from him the main responsibilities of daily life, when he returns home suddenly finds himself in a situation where he has to adapt himself to many features of his environment, to make numberless small decisions, and to bear many responsibilities. He is not likely to be yet wholly recovered; for the complete cure can only be effected by the test of normal life. It is essential that he should have the way smoothed for him at this point, his family and friends and employer instructed in the proper way to deal with him, that assistance and guidance should be within easy reach if he needs it, and that his responsibilities should be kept at the degree that will strengthen but not overwhelm him. It is not enough that he be given the address of an office at which he may call if he needs advice, for lowered initiative is characteristic of these forms of nervous and mental disorder, and the patient who most needs advice may be least likely to come for it. To return a soldier to the community without social care, after medicine and psychology and vocational training had expended their skill to the utmost upon him, would be like producing with all possible art a finely fashioned instrument and then neglecting the simple process of seeing whether it could be used by the operator.

In after years when the vividness of war experience has become dulled, the man who still shows symptoms of mental disease that he contracted long before in the army will perhaps meet with no more consideration than such cases among civilians to-day. It is not easy to remember that irritability, lapses of memory, absent-mindedness and weakness may be symptoms of a disease that occurred two or three or five years ago. It is not easy to be patient with a person who complains constantly of feelings that we all have sometimes and do not make much of; who still suffers from a shock that happened many years ago. That is, it is hard to take the proper attitude toward these cases, unless the fact of disease is recognized and its nature understood. In Case I, below, an Italian laborer is suffering from paralysis from a

neurosis caused by an accident six years ago. The man in Case X was three years getting back to self-support, and still suffers many aches and pains. Case IV, a laborer, who had been a particularly industrious, responsible sort of man, showed a distinct change of character a year after an accident.

The following cases dealt with by the social service of the psychopathic hospital are cited in illustration of the range of social interest, in regard to both cause and effect, presented by the neuroses of civil life. The cases exemplify three types of problem in regard to social treatment.

1. Cases which resulted in failure through lack of medical resources and inability to force treatment (examples: Cases I to III).

2. Cases in which successful results have been obtained by comparatively slight service, such as advice to the patient's family or finding the patient a suitable position (examples: Cases IV to VIII).

3. Cases in which intensive social care has obtained good results, or where it may be expected to do so (examples: Cases IX to XV.)

CASE I. — E—— T——; Italian laborer with neurosis following leg injury; in six years bedridden. Five or six years ago on his way to work he jumped from a moving car and fell, hurting his leg. He walked some distance to his work, arriving ill and faint. After a few days at home, he went to a hospital, where it was found that the fibula was fractured. After recovery he continued to complain of pain and stiffness in the leg, and did only a little light work for the next three years on the estate where he had been caretaker. For over two years he has claimed that he cannot walk, and has sat at home doing nothing. About once in six weeks he would walk about the room for ten or fifteen minutes. He attempted suicide once by drinking a quantity of poison used for spraying trees, because he could not endure the pains and his helpless state. He threatened to cut his leg off with an axe, believing that he would be all right if he got rid of that leg. His family believed this too, and found a physician who agreed to amputate the leg at the patient's home. Through his employer he was sent to this hospital instead. He had been examined by several physicians, who found the leg normal. Here the patient insisted upon amputation and maintained that he could not walk; but on pressure he walked readily. The case was diagnosed as traumatic neurosis and the man was recommended to a State hospital as a voluntary patient, but refused to remain after a few weeks. This man had been a steady, reliable person of good disposition and good health until the accident. About a year before the accident, his daughter, aged seven,

was murdered a short distance from home. Two years ago his father and stepmother were murdered and burned in their home in Italy. The patient is said to have been greatly affected by these tragedies.

Medical facilities for treatment of such a case do not exist in the patient's town, and as he believes he cannot walk, he will not come to the Boston clinic. At present he stays in bed most of the time.

CASE II. — M—— T——; escaped treatment by leaving the State; once a competent forewoman. The patient stated that she had felt weak ever since a fall two months before, when she received a scalp wound; there was something the matter with her body; she could not walk as well as other people. She made no attempt to walk and was irritable when it was suggested. Her landlady said she had had spells of blindness lasting two or three days. She would be laughing and talking and suddenly would become blind. Two days after her accident, she had a maniacal attack, followed by short irrational spells. Before the accident, she was one of the most efficient and best liked forewomen in a factory where she had begun as a packer, and had been quickly advanced to the supervision of forty or fifty girls. She is a widow, twenty-seven years old, with no children, and with no relatives in this neighborhood. Shortly after discharge, she went to New Hampshire, after refusing to report to the out-patient department or to receive advice from the social service. We received a postcard signed by her without message or address.

CASE III. — Q—— S——; law student with hysterical blindness and mutism, ending in suicide. A newsboy with an ambition to be a lawyer, this young man managed to go through high school, and then was helped through law school by his wife, who married him when he was twenty, and worked so that he could get his training in law. He took a three years' course in two years and four months; and then made three unsuccessful attempts to pass the bar examination. After he had taken the examinations for the fourth time, he was sure he had not passed and profoundly anxious about the support of his family. Before he received notice that he had successfully passed, he became blind for four days. His sight returned while an X-ray was being taken.

A month later he could not speak and did not seem able to communicate in writing. From a sanatorium where he was sent, he escaped one day and went to the public library. A physician who met him on the street and took him back persuaded him to write where he had been, and he suddenly began to talk. He recovered and practiced law for a year and a half, supporting his wife and child.

During an attack of headache and drowsiness, he went to stay with his mother in another State for a rest and change. She took him to a hospital for mental diseases believing that he had ideas of suicide, and he was transferred to our hospital. He was very much depressed by this experience and worried about his wife and child, fearing that he could not support them. Eleven days after he left the hospital, he committed

suicide. He had been sent to a farm for recuperation under excellent conditions, but was homesick and pleaded with his wife to take him home. When she did so, he seemed normal and cheerful, and gave no indication of suicidal intention when his wife went to work a few hours before his death.

CASE IV. — K—— F——; character change a year after accident in previously healthy, industrious laborer. A single man of thirty-four, earning \$14 a week in a factory, was badly burned about the head by an open electric wire. After his wounds healed he was “nervous” and did not sleep well, seemed to want to be by himself more than usual, and suffered continually from headaches and backaches, but showed no signs of mental disorder. He was not able to work for about two years, and then for a year filled an inferior position for the same company.

About a year after the accident for a short time he acted queerly, writing irrational things on slips of paper. Over a year later, he began to be very irritable, thought people were following him in automobiles, talked very loud, wanted the windows open, was suspicious of his food, did not want to see his mother, talked about girls being false to him. When brought to the hospital he said he felt “funny”; that he would like to go where he could get rested.

After ten days he was discharged to the out-patient department. In six weeks he appeared well, and two weeks later went to work in a garage for three evenings a week. When the garage was given up and he lost his employment, the patient had an attack of loud talking and irritability lasting two days. A position was found for him as assistant janitor, which he filled satisfactorily.

This patient before his accident was in good health, strong and industrious, even-tempered, of a pleasant disposition, one of a family of healthy, competent brothers and sisters. He had been the main support of his mother and the younger children, assuming this responsibility at the death of his father.

CASE V. — M—— N——; shoplifting in somnambulism by a woman of high character. Miss N—— and three unmarried sisters live with their mother in a quiet town in sight of the school they attended and the church where they were baptized. Their lives are sober, orderly and cheerful, pleasantly varied by quiet forms of amusement and the company of friends. The oldest sister keeps house and “manages” the family; the others work, our patient being a bookkeeper. They are all healthy and capable, contented with their manner of life and not consciously aware of its monotony.

The patient went to work one Saturday morning feeling that she had the grippe and was not well enough to go in, but must finish some important work. She stayed at the office until past her lunch hour, working over figures in which there was an error of \$895, until she had found the mistake. She remembers putting on her hat and coat to go out, and then can remember nothing else until she found herself the following

Thursday in bed in our hospital, except a few moments when she saw a sea of faces and among them a man, whom she took to be a minister.

What happened was that she went from her office to a department store, took a pink waist (a color she particularly dislikes) from the counter and walked out with it over her arm. She was arrested, and at the police station gave a name similar in sound to her own. Her sister succeeded in locating her, and saw at once that "she was not herself." The patient did not recognize her sister. After the court had put her on probation, she was sent here for observation. There was some suspicion at the court that she was malingering, for which there was clearly no ground. She had suffered from an attack of somnambulism, in which she had done what consciously she would never have done. Her mortification at her arrest and probation was acute; and her family also were shocked and mortified; but with the condition explained, both they and the patient are beginning to take it calmly.

CASE VI. — N—— K——; amnesia in a girl after a family quarrel. For several years this patient, a young girl of seventeen, has had hysterical attacks if anyone criticised or argued with her. After an argument with her family about a young man, continued overnight, she left home to look for work. She was found by the police on the street, crying and moaning, and unconscious. In a near-by hospital, she complained of pains in the abdomen, but showed no signs of illness. She said she could not walk, but walked well when forced to. She resisted examination, throwing herself about and shrieking.

She remembered nothing from the time she left home until she found herself in our hospital, to which she was transferred, except that she was on a downtown street and felt queer. At first she gave a false name, concealing her identity because she feared her family would be angry with her. When sent home she had another attack immediately and was taken to a local hospital. Six months later she was well and happy, "nervous" if the door-bell rang or anything unusual happened, and never went out except with some of the family; but had no more attacks.

CASE VII. — I—— T——; hysterical attack in a young girl brought on by fright at an attempted kiss, following excitement over the death of a pet dog. A Canadian girl of seventeen, who was brought up by an aunt after her parents' death, had always been well and never showed nervous symptoms of any kind; had always been easy to get along with, though antagonistic to anyone who tried to command her; had worked as nurse maid and was successful with the children and very well liked. One night the maids in the house gave a party, which they did not want their employers to know about. The afternoon before, the patient had been very much shaken by an accident to a pet dog. Toward the end of the party, the patient went into another room, followed by a young man who several days before had asked her to go away with him. He tried to kiss her. She remembers that she screamed and then cannot remember anything clearly until the next afternoon on the hospital ward.

Her companions found her crying and screaming. This continued into the morning, so that a doctor and nurse were called. The patient went to sleep finally, but on waking again began to scream and shout. In the admission office she jumped up laughing and shouting at the mention of the party, and tried to bite and scratch at any attempt to restrain her. After ten days she went home in normal condition, and during five months had had only three or four slight attacks that occurred in the night.

CASE VIII. — N—— F——; child with attacks of confusion after fright. The family lived in Paris until the summer of 1915, and this little girl of eight had been frightened a number of times by air raids. On the way to the boat, on which they were to sail for the United States, the child was badly frightened by a barking dog. She was ill on the ship, slept most of the time, cried and said she was afraid. Soon after she arrived in Boston, after a small fire in the house, she had an attack in which she seemed unconscious of her surroundings, and ran about crying, "I don't know where I am. Where am I, mamma?"

During the next six months she had several attacks, lasting about a week, of fright, crying, confusion and headache. One occurred after grippe, another after two hours at a moving-picture show. In the attack that led to her being brought to the hospital, she asked for a knife to kill herself. On the ward, she cried almost continuously, and was quiet only when some one held her hand. She did not talk even to her family and never smiled. After ten days she was in a normal condition and went home, but was kept out of school a few weeks. We made sure that her mother understood how to manage her wisely, and after six months, as there had been no further symptoms, she was discharged from the clinic.

CASE IX. — B—— N——; a case of traumatic neurosis with bad heredity, treated with unwise indulgence leading to invalidism and dependency. This woman of forty-seven is described by a friend as always "peculiar and difficult," but since an accident five years ago "impossible." She is said to be the most difficult problem ever handled by her church, all types of women in the parish having attempted to help her without results. She was struck by a heavy iron door while working in a bookbindery, and received a blow on the head and a fracture of the arm. She has not worked since and considers herself a hopeless invalid. She has developed a peculiar shuffling gait and refuses to walk for longer than a few moments. She complains of a numb, heavy feeling in her legs, pressure and pain in her head, and dizziness. She is now living on the last of her accident insurance, which she received in a lump sum, \$800 in all. At the time of her accident, she received much sympathy and assistance from the clergyman and ladies of the parish; but one by one she became prejudiced against those who sought to help her; and one after another they decided that she was so irascible and ungrateful they could do no more for her.

The early environment of this patient was poor. Her father was alcoholic and engaged in work that kept him away from home most of the time, and her mother was a peculiar, bad-tempered woman who finally became insane. Her three sisters were "peculiar," and one had an insane son. One brother is "very peculiar" and had an insane son; and another brother died of cancer. At seventeen the patient married, and was deserted three years later after she had had three induced miscarriages. She then supported herself successfully, earning a maximum wage of \$12, and making her home with two old ladies, who kept a lodging house and put up with her unpleasant disposition. She was bad-tempered, gloomy, selfish, and inclined to be seclusive. Although at times she tried to be sociable, she could make few friends.

When she left the hospital, she was induced to try some simple folding in a bookbindery; but the other women in the shop did most of her work, and after a few days she gave it up. She has only \$100 left. Her family cannot support her. She abuses them violently for their cruelty and neglect, though in reality they have been as kind as possible. She has promised to do some home work and later on to try a job again.

CASE X. — Y—— A——; young married man three years regaining his economic status after an accident. A young Jew, twenty-three years old, was working as roofer's helper when a tar bucket, weighing about twenty-five pounds, fell from the fifth floor upon him. Nine months later when he got to us, he had no physical trouble but complained of impaired vision, difficulty in remembering, and so much vertigo that he was unable to work and for a time could not be persuaded to go alone on the street. He had been a steady fellow of good habits, cheerful and even-tempered, very fond of his family, but he had become depressed, quick-tempered, irritable. He is very apprehensive about the support of his family, as the accident insurance was not sufficient for their customary standard of living. Later on a lump sum settlement was made and the money invested in a store. The business failed after a few months, during a time when the patient became upset over his wife's absence in a hospital for confinement. When he had become well enough to work, he refused to take a job that paid less wages than he was used to, but by slow degrees he is getting back to the habit of regular work in his old trade after three years' supervision. He worked at temporary jobs of different kinds, with intervals of job hunting and sickness. He would promise readily to apply for a vacant position and then do nothing about it. While working he ran a nail in his foot, strained his back, and fractured his wrist at different times, besides having such ailments as grippe and toothache. All this while it was frequently necessary to obtain financial aid for the family, to see that the children were kept clothed, and that the wife's courage was kept up.

CASE XI. — I—— P——; a telegrapher with generalized tic recovers with rest and re-education. The patient, a girl of twenty, had worked for two years as telegraph operator in a noisy office underneath an elevated terminal. She liked her work but said there was a lot of worry

about it. She lived with a relative in a small tenement full of children. She gradually developed a nervous condition that caused her to give up her work and go to her home in a country town for a rest. The family tried to keep it quiet for her, but "there were people coming in all the time and the piano being played." She got worse and was sent to this hospital, where she could remain only ten days as she was not a resident of the district. On discharge she jerked her arm and leg on one side continually, twitched her face, and made a snorting noise in her throat.

The medical recommendation was "rest and re-education," with the following note added: "If the patient's trouble is a tic and not chorea, she may recover with the help of somebody who can get her confidence and teach her self-control. If she does not recover, she is threatened with a serious condition that would incapacitate her." This course of treatment was followed with the help of a convalescent home, which made an exception and admitted her in spite of her pronounced nervous symptoms after another convalescent home had refused her, because their doctor thought she would annoy other patients by twitching and snorting. After six weeks she was fit to take a position at light housework. The jerking had stopped and only a slight sound in the throat indicated a remnant of the trouble. A year later she was entirely well.

CASE XII. — T—— T——; traumatic epilepsy in a teamster aggravated by alcohol. A teamster returning from work Saturday night with a companion, both of them somewhat intoxicated, was thrown from his wagon, striking the side of his head against the curbstone. His companion took him to the stable and left him there, unconscious. Later when he was found and taken home, his wife supposed he was drunk and put him to bed. When a hemorrhage began, a physician was called, but did not discover a fracture of the skull until the man regained consciousness two days after the accident. In the hospital, to which he was sent, he was mentally disordered for five weeks, then became unconscious and was thought to be dying, when he suddenly recovered consciousness and mental clearness. After his return home, he had a convulsion about once a month, and brief spells of not knowing what he was doing; for example, when he wanted something from the pantry he would go to the bathroom for it. Since the accident, which was seven years ago, he has loafed a good deal, partly because he lost jobs on account of his convulsions and partly because he did not care whether he worked or not. Before his injury he worked steadily, was never sick, was kind to his family and enjoyed home life; and although he drank, had no court record. Since, he has been arrested several times for drunkenness and sentenced once to the house of correction. He was brought here because one evening when he was driving his team to the barn he had a convulsion, in which he fell and injured his head. He is now working regularly and by his wife's account seems much better in every way.

CASE XIII. — G—— N——; continuous motion of hands with amnesia after quarreling. The police found the patient in a railway station unable to give an intelligible account of himself. He was moving

his hands and snapping his fingers continuously, begging that some one would stop them without hurting him. Seen in bed the next day, he had both arms outstretched bent to a right angle at the elbow and was rubbing the thumb and forefinger together rapidly. When told to stop, the motion became faster. After a week in the hospital, his mental condition became clear and the movements of his hands stopped except for an occasional twitch. He gradually regained memory of how he came to the hospital, but it was a number of weeks before he could recall perfectly the events that led up to his admission. He said that he got into a dispute with a man who had a whip-end in his hand, with which he hit the patient on the side of his head. At the time he was worrying a good deal and had been working hard in a sawmill. He had written his brother that tending the saw got on his nerves.

A position as hospital orderly was obtained for him, as this was his customary work. His health was good and his work satisfactory. During a great conflagration in the city he worked day and night, giving good service and stood the strain well for a time. But he began to feel nervous and took liquor to make him sleep. He was brought to the hospital again by the police who found him wandering on the street. This was six months after the first time. He said that one of the nurses called him down, and he answered her back; then went to his room and remembers nothing more until he got to the hospital.

Eight months later he was well and happy, and married to a widow older than himself. He was still employed in the same hospital, where the superintendent said he did very good work.

CASE XIV. — C—— T——; a "fine fellow," after a collision reduced in two years to a state of helplessness and anxiety; wife under the strain became hysterical. A junk collector in business for himself, saving a little money, happily married, devoted to his children, considered by his friends "a fine fellow." He came from Hungary at the age of twenty, learned English, and made good. His wife was a thrifty, tidy housekeeper. One day his wagon was hit by a street car, and he was rendered unconscious. For five weeks he was unable to go to work. A suit for damages was brought and is still pending. The patient was nervous and not able to carry on his business, ran into debt, sold his horse and wagon, tried peddling on foot and finally got into such a state that he could not hold anything in his hands and had to give up work. It was then he came to our hospital, two years after the accident. He complained of a "rubbing sound" in his right ear, of headaches and dizziness. He said he could not stand any noise, and if he were in the house when any talking was going on, he had to leave. He was harassed by his inability to support his family. The wife meanwhile developed nervous symptoms. She became more and more worried about her husband's condition and the poverty to which his decreased earning capacity reduced the family. Recently she has had a number of hysterical attacks, in one of which she threatened to throw the baby out of the window. With

reassurance both the patient and his wife at once improved somewhat. An effort is being made to find the man a suitable position where he will be under direction, and not entirely dependent upon his own initiative as in junk collecting. The law suit will soon be tried, and the settlement of that cause of uncertainty should be beneficial.

CASE XV. — K—— E——; industrial reinstatement through social care. A hundred-pound weight struck the patient a glancing blow on the head, which caused a scalp wound but did not render him unconscious. He saved himself by dropping 30 or 40 feet on to another part of the machinery. He worked for a day or two and then had to give it up on account of severe headache and dizziness. Afterward he complained of a continual pain in his back, and was not able to work. He came to the hospital a year after the accident, referred by the Industrial Accident Board. He had made several unsuccessful attempts to work and expressed a desire to be cured.

This man had been a hatter earning as much as \$24 a week at one time; later was a machine oiler. He had been ambitious, attending evening classes for firemen, reading and studying a good deal, and had saved several hundred dollars. He was a good family man, of amiable disposition, energetic and strong. Since the accident he had been apathetic, wanted to be alone, did not read, and was irritable when approached. He slept poorly, and complained of feeling a tremor all over his body and a sense of his legs going out from under him if he attempted anything involving stooping or lifting.

The wife was found to be a woman of even, pleasant disposition, well meaning but rather ignorant, a good housekeeper and thrifty. There were two children. The savings had been used up, and the accident insurance was barely sufficient to maintain the family. The man was desperately anxious to be earning, but at the same time he felt himself unable to do any work at all. He agreed to follow our advice, and has done so faithfully.

At first he was sent to a cement shop conducted by another hospital; where he could work only fifteen minutes at a time in the beginning, and had to be given work by himself, as he was irritable with other workmen. At the end of three months he was ready for light employment, and was sent to a position as elevator operator in a college dormitory. Being in the habit of talking a good deal about his symptoms, he told the employer that he had dizzy spells and gave the impression that he was likely to faint several times a day, so that the man did not dare to employ him. But when this exaggeration was explained, he got the position. And then the struggle began. With the help of one of the college boys he was kept under constant supervision, for he needed daily encouragement. The work was light and the boss favored him as much as possible. Days when he felt he could not go to work alternated with more hopeful days. He suffered from nausea, weakness of legs, dimness of vision. By almost imperceptible degrees he has improved, until now, a

year and seven months since he came under treatment, he is almost restored to a firm industrial footing.

He did not lose confidence when the college dormitory closed for the summer; but with guidance found another suitable job running an elevator in an apartment house. Recently his tenement was burned, and he lost all his household goods; but he met the situation competently and with the help of relatives is getting another home. For over a year he has been in great anxiety about his baby who is threatened with a serious illness. He has had spells of stomach trouble, which have improved under treatment.

In spite of all these difficulties he is now practically well, except for minor pains and feelings of discomfort, and slight spells of irritability, symptoms which he has learned how to control.

NOTE BY DR. E. E. SOUTHARD.

As a brief appendix to her paper on "Shell-shock Analogues: Neuroses in Civil Life having a Sudden or Critical Origin," Miss Jarrett has asked me to sum up the medical point of view concerning shell-shock.

Shell-shock is a picturesque and very broad term which has much popular appeal but at the same time somewhat offends the systematic medical worker. The term "shell-shock" looks to the systematic medical man much as the term "weeds" might look to the systematic botanist. In short, the term "shell-shock" has almost no diagnostic or identifying value whatever. Set down before a case of shell-shock, a physician has to make a neuropsychiatric analysis and successively exclude a great variety of conditions. Thus many a case of so-called shell-shock turns out to be nothing more or less than a phenomenon of brain syphilis, and English surgeons have gone so far as to advocate that their cases of shell-shock should be given the serum test for syphilis. Other cases apparently represent rather unusual reactions to alcohol, or at all events are clouded by the alcoholism of the victims. Still more confusing and numerically more imposing are the cases of actual focal destructive brain disease — psychoses of a traumatic nature in which there has been actual trauma to the brain. Industrial Accident Board work in syphilis practise has familiarized us with the difficulties of diagnosis between the actual brain trauma cases and the traumatic functional neuroses. When we come to the traumatic functional neuroses, we are coming to what most authors would regard as the kernel of the shell-shock problem. If instead of traumatic

neuroses we say shell-shock neuroses, we are simply substituting for the word "traumatic" a more specific term, "shell-shock."

Accordingly, that fraction of Miss Jarrett's cases in her paper on "Shell-shock Analogues," which deals with cases in which there was actually a trauma or accident, conforms fairly closely to what we may think of as shell-shock neuroses of the war.

However, war experience shows beyond question that without the factor of physical shell-shock at all, perfectly convincing neurotic symptoms may develop. The laity is apt to think of these cases also as shell-shock cases, and the term is widespread amongst the soldiers and has even reached the vaudeville stage for all sorts of conditions in which there was not the slightest sign of trauma. Thus in the Russian literature, there is a case of a man who never saw the front and served only in the rear, but his imagination was such that he developed perfectly characteristic battle-dreams and war hallucinations. Should this case be termed one of shell-shock? If so, it was one as you might say of *ideal* shell-shock. The shell idea was as effective as the shell itself in producing the symptoms. In short, the neurotic symptoms that the laity inclines to term shell-shock occur both with and without the physical event, shell-shock.

The chief value in the use of the term "Shell-shock Analogues" by Miss Jarrett would be to suggest that in civilian practise there are precisely the same conditions for the production of functional neuroses as in war.

REFERENCE.

1. SMITH, G. ELLIOT and PEAR, T. H.: "Shell-shock and Its Lessons." Manchester, 1917.

THE VALUE OF OUT-PATIENT WORK AMONG THE INSANE.*

BY A. WARREN STEARNS, M.D.,

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One of the most important developments in the caring for patients with nervous and mental diseases has been the extension of out-patient work by State hospitals. This work is new enough so that it seems worth while for those engaged in it to compare notes frequently. This paper aims to describe and to discuss briefly the work of the out-patient department in the Boston Psychopathic Hospital, this department now being in its fifth year, and so one of the oldest.

The clinic is held daily from 2 to 4 P.M., and Wednesday evenings.

There are three departments: namely, (1) medical; (2) social; and (3) psychological.

The medical department is made up of a part-time or visiting staff, who do only out-patient work, assisted by internes assigned from the house staff.

The social service and psychological departments do both house and out-patient work and are not exclusively attached to the out-patient department.

Upon coming to the hospital, the patient is met by a clinic manager, who takes the history and directs the patient to the different departments. Much time is saved by supplying social agencies with a blank history form, so that most of their patients come with a complete typewritten history. These patients can then be referred directly for physical examination, and, if the problem is one of defect, to the psychologist, reaching the doctor when completely examined. If the problem is not one of defect or is doubtful, the patient is referred to the doctor after the history has been taken and all physical examination made. A Wassermann blood test is made on every patient. As the clinical manager is attached to the social service department, she has in mind the social needs of each case, and can call the attention of the social service department to such need, but most patients are referred to the social service department by the doctor after his

* Being contributions of the Massachusetts Commission on Mental Diseases, series of 1918. Read at the seventy-third annual meeting of the American Medico-Psychological Association, New York, May 29-June 1, 1917.

interview. If diagnosis is impossible and more observation necessary, or if the patient has a psychosis, he is now referred for admission to the house.

During the last hospital year, Oct. 1, 1915, to Oct. 1, 1916, 1,485 new patients were received at the department, and 9,261 total visits were made.

The sources from which these new patients came were as follows:—

| | |
|---|-------|
| Psychopathic hospital (after-care), | 413 |
| Charitable organizations, | 402 |
| Other hospitals, | 193 |
| Own initiative, | 167 |
| Doctors, | 104 |
| Courts, | 97 |
| Schools, | 69 |
| Miscellaneous, | 40 |
| Total, | 1,485 |

The following diagnoses were made: —

| | |
|---|-------|
| Feeble-minded, | 298 |
| Sub-normal, | 21 |
| Retarded, | 68 |
| | — 387 |
| Alcoholic psychosis, | 47 |
| Dementia præcox, | 72 |
| General paralysis, | 24 |
| Manic-depressive insanity, | 30 |
| Senile psychosis, | 3 |
| Psychopathic personality, | 29 |
| Unclassified and miscellaneous, | 34 |
| | — 239 |
| Alcoholism, | 43 |
| Syphilis, | 73 |
| Psychoneurosis, | 149 |
| Chorea, | 11 |
| Epilepsy, | 37 |
| Speech defect, | 55 |
| Drug habitués, | 5 |
| Constitutional inferiority, | 5 |
| Delinquency, | 41 |
| Organic nervous disease, | 25 |
| No nervous or mental disease, | 105 |
| Nonsyphilitic,* | 131 |
| Deferred and miscellaneous, | 179 |
| | — 859 |
| Total, | 1,485 |

* These were members of families of syphilitic house patients sent in for blood examination.

About one-half of the patients are problem children, the figures of January, 1917, illustrating this: —

| | |
|----------------|-----|
| Male adults, | 22 |
| Female adults, | 49 |
| Children, | 65 |
| Total, | 136 |

Although to quite a large extent this is a consultation clinic, and diagnosis is the essential object sought, the following different forms of treatment are used: —

Hydrotherapy. — The hospital is equipped with a standard hydrotherapeutic room, to which out-patients are referred, usually being given three treatments a week.

Psychotherapy. — Patients requiring psychotherapeutic treatment are referred to special workers along this line.

Social Service. — Some patients are referred for more investigation to aid diagnosis, others for employment, a special worker being maintained who has charge of the latter. Many are referred for supervision, it being found that certain tractable insane persons, or those with abnormal personalities, can get along satisfactorily in the community with a varying degree of social service supervision.

Speech Training. — A special clinic for speech defects is in operation for this class of cases, being held two afternoons a week.

Men's Club. — An informal club, with weekly meetings, has been organized principally to interest and help alcoholic patients, but other types are admitted. The active membership is now 86 men. A women's auxiliary, composed of wives of members, has also been organized. This club seeks to furnish a certain amount of entertainment and recreation to keep the patients' association with the hospital, and to encourage members to help each other.

Antisyphilitic Treatment. — All patients with a positive Wassermann or evidence of syphilis are referred to special workers who have charge of the syphilis problem.

House Observation. — As stated above, patients needing observation or temporary care are referred directly to the house.

An important aid to efficient work is the follow-up system. At each visit of a patient a slip is sent to a special follow-up worker, giving date of next visit desired. If the patient does not report on that date a formal printed letter is sent as a reminder. If this does not bring the patient, the telephone is tried, and if unsuccessful, the patient is visited by this worker.

Of 577 new patients told to return, 312 came without, 48 with, a reminder.

Of 375 house cases referred to the out-patient department, 184 came without, 38 with, a reminder.

Of 6,635 total visits, 5,852 came without, 783 with, a reminder.

The exact expense of the out-patient department cannot be given at this time, but appears to be between \$1.50 and \$2 a visit. This should be compared with the 18 to 57 cents per visit, as given by Mr. Davis in a report of a committee on out-patient service of the American Hospital Association.

For some time the writer has been of the opinion that a great many of the patients admitted to the house for ten days' observation could be as well handled by the out-patient department, and with this in mind 100 consecutive house admissions were examined and the opinion formed that 35 of these cases could have been cared for as well by the out-patient department without house admission. These are largely cases where diagnosis is the object sought. Obviously an out-patient visit would be much less expensive than ten days' house observation. From the experience of the past five years, a few points seem of special importance: —

1. Inasmuch as the clinic is quite largely for consultation, there must be a well-trained and mature psychiatrist in charge. The large proportion of neurological material commonly forming an out-patient department makes some special training in this branch necessary.

2. Lack of adequate facilities for caring for psychoneurotics is apparent, it being almost impossible to get free beds for this class of patients.

3. Need of elaborate equipment and many workers to carry on psychiatric out-patient work.

The examination is so complex that unless several persons can be engaged at once, few patients can be examined in an afternoon. This makes it seem wiser to hold out-patient clinics at hospitals where entire staff will be available, rather than in out-lying districts. Prejudice of people against going to hospitals does not seem to be a sufficient argument to warrant the waste of effort entailed by sending a staff of a hospital to distant points.

4. The important position of social service in out-patient work.

Doctors must realize this and give the social worker more recognition, just as a trained nurse or psychologist goes into certain detail better than a doctor, so a trained social worker is fitted to take charge of that branch of our work under medical supervision.

5. Out-patient departments are an advantage: first, to patients, in that many prefer staying at home and are happier and better off there, as are their families; second, to the State, in that home care can save much expense under supervision. With stimulated and instructed family interests, many now a burden to the State may be self-supporting; third, to the doctors themselves, as they see a vast variety of nervous and mental diseases not seen at the hospitals and so get a broader training. It also furnishes a place where psychiatry can be kept pure, as doctors and special workers connected with social agencies and courts get a one-sided experience and do not become good psychiatrists. By working part-time in out-patient clinics connected with hospitals, they can keep in touch with the whole field.

POINT SCALE EXAMINATIONS* ON THE HIGH-GRADE FEEBLE-MINDED AND THE INSANE.

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In February, 1916, when we began the investigation here reported,† to our knowledge no extensive use of the Yerkes-Bridges child (pre-adolescent) Point Scale had been made with subjects at the borderline of feeble-mindedness.‡ We were concerned to determine as accurately as possible the intellectual level reached by individuals who had proven that they were just unable to get along by themselves in the world, and to ascertain for these cases the range of variation in intellectual ability. We wished, secondly, to obtain data for comparison with ratings already obtained on the same subjects by the use of the Goddard 1911 revision of the Binet tests,§ and to ascertain the diagnostic significance at the upper ages of the individual tests on the Point Scale. As work progressed, it became increasingly evident that the child scale was unsuitable for our purposes in some cases, since with it our highest grade subjects attained scores equal to those of normal subjects. This outcome indicated that not enough difficult tests were included in the scale to give chances for the subnormals to display their inferiority. Accordingly we gave the preliminary form of the Yerkes-Rossy adult Point Scale|| to about thirty subjects, who received high scores on the child scale.

Our subjects were 100 boys and 100 girls at the Massachusetts School for the Feeble-minded at Waverley. There are no spastics, Cretins, Mongolians, microcephalics or hydrocephalics in the group. Negroes are designated in the tables by parentheses. With scarcely any exceptions our group contained all of the high-

* The directions for grading given by Yerkes, Bridges and Hardwick, "A Point Scale for measuring Mental Ability," 1915, proved too meager for our work and we have therefore made a more detailed list of typical answers and their evaluation. This list is now in use in the psychopathic hospital, Boston, and is given in Appendix B of this paper.

† The problem of the applicability of the Point Scale to the high-grade feeble-minded was suggested by Maj. R. M. Yerkes. To him, to Dr. W. E. Fernald and Dr. F. Mateer of Waverley and to Dr. E. E. Southard of the psychopathic hospital grateful acknowledgments are due for valuable suggestions and criticisms.

‡ The report of T. H. Haines, Ohio Board of Administration, Pub. 7, December, 1915, had not reached us. Compare also R. M. Yerkes and L. Wood, Journ. Ed. Psych. 7, December, 1916.

§ H. H. Goddard; reprint (1911) from Training School, January, 1910.

|| A brief account of the nature of this scale and of our results with it are given by R. M. Yerkes and C. S. Rossy, Boston Med. and Surg. Journ., Vol. CLXXVI, No. 16, April 19, 1917, p. 569 ff. Certain other results follow in this paper.

grade girls at the school. There are 68 whose mental ages are 9 or over.* Most of the high-grade boys at the school were also examined, though some few could not well be taken from their work on the farm. Our cases, however, included 70 boys of 9 years mental age and over. For the rest, the groups are made up chiefly of boys and girls of slightly lower mental ages whom it was necessary to examine to make sure they were really below 9, together with a few at much lower ages for the sake of certain comparisons. The median chronological age of the boys examined was 16 plus a median variation of 2; of the girls, 24 + 3. The median chronological age of the 70 high-grade boys was 16 + 2; of the 68 high-grade girls, 24 + 4. All of the cases had been tested at the school less than two years before by Goddard's revision of the Binet tests. The following facts make it probable that for many purposes we may make comparisons between the results of the two scales without significant errors due to lapse of time between the giving of the two sets of tests: (1) the median chronological ages of our lower grade and of our higher grade groups are identical; (2) the Binet measurements give 65 boys and 70 girls with mental age over 9 as compared with 70 and 68 by the Point Scale; (3) many of our group are adults and therefore probably not developing.

TABLE I. — *Point Scale and Binet Data upon 200 Feeble-minded.*

BOYS.

| CASE NUMBER. | Chronological Age. | CHILD POINT SCALE
— MENTAL AGE. | | | Binet Mental Age. | Coefficient of Intelligence. | INTELLIGENCE QUOTIENT. | | Difference between Point Scale Mental Age and Binet Mental Age. | Adult Point Scale Score. |
|--------------|--------------------|------------------------------------|------------|------------|-------------------|------------------------------|------------------------|--------|---|--------------------------|
| | | Score. | Old Norms. | New Norms. | | | Point Scale. | Binet. | | |
| 1, . . . | 22 | 21 | 4.8 | 4.9 | 6.6 | 24 | 31 | 41 | -1.7 | - |
| 2, . . . | 17 | 29 | 6.0 | 6.2 | 7.6 | 34 | 38 | 48 | -1.4 | - |
| 3, . . . | 24 | 32 | 6.5 | 6.6 | 6.4 | 36 | 41 | 40 | .2 | - |
| 4, . . . | 15 | 36 | 7.2 | 7.2 | 7.0 | 45 | 48 | 47 | .2 | - |
| 5, . . . | 10 | 38 | 7.5 | 7.5 | 8.2 | 67 | 75 | 82 | -.7 | - |
| 6, . . . | 11.5 | 39 | 7.7 | 7.6 | 7.2 | 58 | 65 | 63 | .4 | - |
| 7, . . . | 15 | 40 | 7.8 | 7.7 | 8.2 | 49 | 51 | 48 | .5 | - |
| 8, . . . | 10 | 40 | 7.8 | 7.7 | 9.0 | 70 | 77 | 90 | -1.3 | - |

* Except when otherwise indicated, the corrected norms of Yerkes and Wood, *op. cit.*, p. 606, are used in all computation in this paper.

TABLE I. — *Point Scale and Binet Data upon 200 Feeble-minded — Con.*BOYS — *Con.*

| CASE NUMBER. | Chronological Age. | CHILD POINT SCALE
— MENTAL AGE. | | | Binet Mental Age. | Coefficient of Intelligence. | INTELLIGENCE QUOTIENT. | | Difference between Point Scale Mental Age and Binet Mental Age. | Adult Point Scale Score. |
|--------------|--------------------|------------------------------------|------------|------------|-------------------|------------------------------|------------------------|--------|---|--------------------------|
| | | Score. | Old Norms. | New Norms. | | | Point Scale. | Binet. | | |
| 9, | 20 | 40 | 7.8 | 7.7 | 8.6 | 45 | 48 | 54 | — .9 | — |
| 10, | 17 | 41 | 8.0 | 7.8 | 7.0 | 48 | 49 | 44 | .8 | — |
| 11, | 16 | 42 | 8.1 | 8.0 | 7.8 | 50 | 51 | 49 | .2 | — |
| 12, | 22 | 42 | 8.1 | 8.1 | 7.8 | 49 | 51 | 49 | .3 | — |
| 13, | 11.9 | 44 | 8.2 | 8.2 | 7.8 | 69 | 69 | 66 | .4 | — |
| 14, | 18 | 44 | 8.2 | 8.2 | 9.0 | 50 | 51 | 56 | — .8 | — |
| 15, | 14 | 44 | 8.2 | 8.2 | 9.4 | 56 | 58 | 57 | — 1.2 | — |
| 16, | 11.2 | 44 | 8.2 | 8.2 | 8.0 | 68 | 73 | 71 | .2 | — |
| 17, | 29 | 44 | 8.2 | 8.2 | 9.0 | 50 | 51 | 56 | — .8 | — |
| 18, | 17 | 45 | 8.3 | 8.4 | 9.0 | 52 | 52 | 56 | — .6 | — |
| 19, | 10.7 | 45 | 8.3 | 8.4 | 8.0 | 73 | 78 | 75 | — .4 | — |
| 20, | 12.1 | 46 | 8.3 | 8.5 | 9.2 | 66 | 70 | 76 | — .7 | — |
| (21), | 16 | 46 | 8.3 | 8.5 | 7.0 | 55 | 53 | 44 | 1.5 | — |
| 22, | 15 | 47 | 8.4 | 8.6 | 8.4 | 57 | 57 | 56 | .2 | — |
| 23, | 11.5 | 48 | 8.5 | 8.8 | 8.2 | 72 | 76 | 71 | .6 | — |
| 24, | 14.2 | 48 | 8.5 | 8.8 | 8.2 | 61 | 62 | 58 | .6 | — |
| 25, | 20 | 48 | 8.5 | 8.8 | 9.0 | 55 | 55 | 56 | — .2 | — |
| 26, | 33 | 48 | 8.5 | 8.8 | 8.2 | 55 | 55 | 51 | .6 | — |
| 27, | 17 | 48 | 8.5 | 8.8 | 10.0 | 56 | 55 | 63 | — 1.2 | — |
| 28, | 14.5 | 49 | 8.5 | 8.9 | 9.2 | 61 | 61 | 63 | — .3 | — |
| 29, | 15 | 49 | 8.5 | 8.9 | 8.0 | 61 | 59 | 53 | .9 | — |
| 30, | 12 | 49 | 8.5 | 8.9 | 9.8 | 70 | 74 | 82 | — .9 | — |
| (31), | 14 | 50 | 8.6 | 9.0 | 10.0 | 64 | 64 | 71 | — 1.0 | — |
| 32, | 13.7 | 50 | 8.6 | 9.0 | 9.0 | 65 | 66 | 66 | .0 | — |
| (33), | 19 | 50 | 8.6 | 9.0 | 8.0 | 57 | 56 | 50 | 1.0 | — |
| 34, | 21 | 50 | 8.6 | 9.0 | 9.4 | 57 | 56 | 59 | — .4 | — |
| 35, | 16 | 51 | 8.7 | 9.2 | 8.2 | 61 | 58 | 51 | 1.0 | — |
| 36, | 15 | 51 | 8.7 | 9.2 | 8.0 | 61 | 57 | 53 | 1.2 | — |
| 37, | 15 | 51 | 8.7 | 9.2 | 8.6 | 63 | 61 | 57 | .6 | — |
| 38, | 14.5 | 51 | 8.7 | 9.2 | 8.0 | 64 | 63 | 55 | 1.2 | — |
| 39, | 15 | 51 | 8.7 | 9.2 | 9.6 | 62 | 61 | 64 | — .4 | — |
| 40, | 17 | 51 | 8.7 | 9.2 | 9.4 | 61 | 57 | 59 | — .2 | — |

TABLE I. — *Point Scale and Binet Data upon 200 Feeble-minded — Con.*BOYS — *Con.*

| CASE NUMBER. | Chronological Age. | CHILD POINT SCALE
— MENTAL AGE. | | | Binet Mental Age. | Coefficient of Intelligence. | INTELLIGENCE QUOTIENT. | | Difference between Point Scale Mental Age and Binet Mental Age. | Adult Point Scale Score. |
|--------------|--------------------|------------------------------------|------------|------------|-------------------|------------------------------|------------------------|--------|---|--------------------------|
| | | Score. | Old Norms. | New Norms. | | | Point Scale. | Binet. | | |
| 41, | 13.7 | 52 | 8.7 | 9.3 | 8.0 | 63 | 63 | 58 | 1.3 | - |
| 42, | 17 | 52 | 8.7 | 9.3 | 9.2 | 60 | 58 | 58 | .1 | - |
| (43), | 16 | 52 | 8.7 | 9.3 | 9.4 | 63 | 60 | 59 | — .1 | - |
| 44, | 15 | 52 | 8.7 | 9.3 | 9.2 | 63 | 61 | 61 | .1 | - |
| 45, | 14.7 | 52 | 8.7 | 9.3 | 8.0 | 64 | 63 | 54 | 1.3 | - |
| 46, | 12.5 | 53 | 8.8 | 9.5 | 9.6 | 74 | 76 | 77 | — .1 | - |
| 47, | 16 | 53 | 8.8 | 9.5 | 8.4 | 63 | 59 | 53 | 1.1 | - |
| (48), | 13.5 | 53 | 8.8 | 9.5 | 9.2 | 70 | 70 | 68 | .3 | - |
| 49, | 10.3 | 53 | 8.8 | 9.5 | 8.2 | 90 | 92 | 80 | 1.3 | - |
| (50), | 21 | 55 | 8.9 | 9.7 | 8.6 | 63 | 61 | 54 | 1.1 | - |
| 51, | 13 | 54 | 8.9 | 9.6 | 9.4 | 73 | 74 | 72 | .2 | - |
| 52, | 17 | 55 | 8.9 | 9.7 | 9.8 | 64 | 61 | 61 | — .1 | - |
| 53, | 15 | 55 | 8.9 | 9.7 | 9.2 | 63 | 65 | 61 | .5 | - |
| 54, | 23 | 55 | 8.9 | 9.7 | 9.6 | 63 | 61 | 60 | .1 | - |
| 55, | 31 | 55 | 8.9 | 9.7 | 8.8 | 63 | 61 | 55 | .9 | - |
| 56, | 11.4 | 56 | 9.0 | 9.9 | 8.6 | 85 | 87 | 75 | 1.3 | - |
| 57, | 45 | 56 | 9.0 | 9.9 | 9.0 | 64 | 62 | 56 | .9 | - |
| 58, | 23 | 57 | 9.2 | 10.0 | 10.6 | 65 | 63 | 66 | — .6 | - |
| 59, | 16 | 57 | 9.2 | 10.0 | 10.2 | 68 | 63 | 64 | — .2 | - |
| 60, | 17 | 57 | 9.2 | 10.0 | 9.4 | 66 | 63 | 59 | .6 | - |
| 61, | 12 | 58 | 9.3 | 10.1 | 9.6 | 83 | 84 | 80 | .5 | - |
| 62, | 15 | 58 | 9.3 | 10.1 | 9.2 | 72 | 67 | 61 | .9 | - |
| 63, | 16 | 58 | 9.3 | 10.1 | 8.6 | 69 | 63 | 54 | 1.5 | - |
| 64, | 15 | 58 | 9.3 | 10.1 | 9.0 | 72 | 67 | 60 | 1.1 | - |
| 65, | 18 | 58 | 9.3 | 10.1 | 10.2 | 66 | 63 | 64 | — .1 | - |
| 66, | 40 | 58 | 9.3 | 10.1 | 9.0 | 66 | 63 | 56 | 1.1 | - |
| 67, | 18 | 59 | 9.5 | 10.3 | 10.0 | 67 | 64 | 63 | .3 | - |
| 68, | 14.5 | 59 | 9.5 | 10.3 | 9.0 | 74 | 71 | 62 | 1.3 | - |
| 69, | 18 | 60 | 9.7 | 10.4 | 10.2 | 68 | 65 | 64 | .2 | - |
| 70, | 20 | 60 | 9.7 | 10.4 | 8.8 | 68 | 65 | 55 | 1.6 | - |
| 71, | 17 | 60 | 9.7 | 10.4 | 9.0 | 70 | 65 | 56 | 1.4 | - |

TABLE I. — *Point Scale and Binet Data upon 200 Feeble-minded — Con.*BOYS — *Con.*

| CASE NUMBER. | Chronological Age. | CHILD POINT SCALE
— MENTAL AGE. | | | Binet Mental Age. | Coefficient of Intelligence. | INTELLIGENCE QUOTIENT. | | Difference between Point Scale Mental Age and Binet Mental Age. | Adult Point Scale Score. |
|--------------|--------------------|------------------------------------|------------|------------|-------------------|------------------------------|------------------------|--------|---|--------------------------|
| | | Score. | Old Norms. | New Norms. | | | Point Scale. | Binet. | | |
| 72, | 11.9 | 60 | 9.7 | 10.4 | 8.2 | 82 | 87 | 69 | 2.2 | - |
| 73, | 15 | 60 | 9.7 | 10.4 | 9.2 | 74 | 69 | 61 | 1.2 | - |
| 74, | 14 | 61 | 9.8 | 10.5 | 10.0 | 73 | 75 | 71 | .5 | - |
| (75), | 12 | 61 | 9.8 | 10.5 | 10.0 | 87 | 88 | 83 | .5 | - |
| 76, | 27 | 61 | 9.8 | 10.5 | 10.0 | 69 | 66 | 63 | .5 | - |
| 77, | 15 | 61 | 9.8 | 10.5 | 9.8 | 75 | 70 | 65 | .7 | - |
| 78, | 16 | 63 | 10.3 | 10.8 | 10.2 | 75 | 68 | 64 | .6 | - |
| (79), | 17 | 63 | 10.3 | 10.8 | 9.2 | 73 | 68 | 58 | 1.6 | - |
| 80, | 19 | 64 | 10.7 | 11.0 | 10.6 | 73 | 69 | 66 | .4 | - |
| 81, | 20 | 64 | 10.7 | 11.0 | 9.8 | 74 | 69 | 61 | 1.2 | - |
| 82, | 15 | 64 | 10.7 | 11.0 | 9.4 | 79 | 73 | 63 | 1.6 | - |
| 83, | 20 | 65 | 11.0 | 11.2 | 10.4 | 74 | 70 | 65 | .8 | - |
| 84, | 23 | 65 | 11.0 | 11.2 | 9.4 | 74 | 70 | 59 | 1.8 | - |
| 85, | 18 | 65 | 11.0 | 11.2 | 10.2 | 74 | 70 | 64 | 1.0 | - |
| 86, | 16 | 65 | 11.0 | 11.2 | 10.0 | 77 | 70 | 63 | 1.2 | - |
| 87, | 15 | 67 | 11.2 | 11.5 | 9.4 | 83 | 77 | 63 | 2.1 | - |
| 88, | 16 | 68 | 11.3 | 11.7 | 11.2 | 81 | 73 | 63 | .5 | - |
| 89, | 21 | 68 | 11.3 | 11.7 | 10.8 | 77 | 73 | 70 | .9 | - |
| 90, | 14 | 70 | 11.4 | 12.1 | 10.6 | 90 | 86 | 68 | 1.5 | - |
| 91, | 15 | 70 | 11.4 | 12.1 | 10.2 | 86 | 81 | 68 | 1.9 | - |
| 92, | 13.5 | 70 | 11.4 | 12.1 | 9.2 | 92 | 90 | 68 | 2.9 | - |
| (93), | 17 | 72 | 11.6 | 12.5 | 9.4 | 84 | 78 | 59 | 3.1 | - |
| (94), | 18 | 72 | 11.6 | 12.5 | 10.4 | 82 | 78 | 65 | 2.1 | - |
| 95, | 17 | 75 | 11.8 | 13.2 | 10.0 | 87 | 82 | 63 | 3.2 | - |
| 96, | 14 | 75 | 11.8 | 13.2 | 11.0 | 96 | 94 | 79 | 2.2 | - |
| 97, | 16 | 79 | 13.0 | 14.2 | 10.6 | 94 | 89 | 66 | 3.6 | - |
| 98, | 17 | 81 | 14.0 | 14.9 | 10.0 | 94 | 93 | 63 | 4.9 | - |
| 99, | 16 | 82 | 15.0 | 15.2 | 10.4 | 98 | 95 | 65 | 4.8 | - |
| 100, | 18 | 93 | 15.+ | 18.+ | 12.0 | 106 | 113 | 75 | 6.+ | - |

TABLE I. — *Point Scale and Binet Data upon 200 Feeble-minded — Con.*

GIRLS.

| CASE NUMBER. | Chronological Age. | CHILD POINT SCALE
— MENTAL AGE. | | | Binet Mental Age. | Coefficient of Intelligence. | INTELLIGENCE QUOTIENT. | | Difference between Point Scale Mental Age and Binet Mental Age. | Adult Point Scale Score. |
|--------------|--------------------|------------------------------------|------------|------------|-------------------|------------------------------|------------------------|--------|---|--------------------------|
| | | Score. | Old Norms. | New Norms. | | | Point Scale. | Binet. | | |
| 101, | 23 | 22 | 5.0 | 5.0 | 6.4 | 25 | 31 | 40 | —1.4 | — |
| 102, | 15 | 25 | 5.4 | 5.5 | 5.8 | 25 | 37 | 39 | — .3 | — |
| 103, | 13 | 27 | 5.7 | 5.9 | 6.6 | 27 | 38 | 51 | — .7 | — |
| 104, | 23 | 27 | 5.7 | 5.9 | 7.2 | 31 | 37 | 45 | —1.3 | — |
| 105, | 32 | 28 | 5.9 | 6.0 | 6.8 | 32 | 38 | 43 | — .8 | — |
| 106, | 19 | 28 | 5.9 | 6.0 | 6.8 | 32 | 38 | 43 | — .8 | — |
| 107, | 33 | 28 | 5.9 | 6.0 | 7.4 | 32 | 38 | 46 | —1.4 | — |
| 108, | 29 | 30 | 6.2 | 6.3 | 7.8 | 34 | 39 | 49 | —1.5 | — |
| 109, | 21 | 33 | 6.8 | 6.8 | 7.6 | 38 | 43 | 48 | — .8 | — |
| 110, | 26 | 33 | 6.8 | 6.8 | 8.8 | 38 | 43 | 55 | —2.0 | — |
| 111, | 26 | 34 | 6.8 | 6.9 | 8.4 | 39 | 43 | 53 | —1.5 | — |
| 112, | 24 | 35 | 7.0 | 7.0 | 8.2 | 40 | 44 | 51 | —1.2 | — |
| 113, | 24 | 35 | 7.0 | 7.0 | 8.6 | 40 | 44 | 54 | —1.6 | — |
| 114, | 20 | 36 | 7.2 | 7.2 | 6.8 | 41 | 45 | 43 | .4 | — |
| 115, | 49 | 38 | 7.5 | 7.5 | 9.0 | 43 | 47 | 56 | —1.5 | — |
| 116, | 24 | 39 | 7.7 | 7.6 | 7.8 | 44 | 48 | 49 | — .2 | — |
| 117, | 25 | 39 | 7.7 | 7.6 | 8.4 | 44 | 48 | 53 | — .8 | — |
| 118, | 26 | 39 | 7.7 | 7.6 | 8.4 | 44 | 48 | 53 | — .8 | — |
| 119, | 19 | 40 | 7.8 | 7.7 | 8.4 | 45 | 48 | 53 | — .7 | — |
| 120, | 25 | 40 | 7.8 | 7.7 | 7.0 | 45 | 48 | 44 | .7 | — |
| 121, | 27 | 43 | 8.1 | 8.1 | 7.3 | 49 | 51 | 45 | .9 | — |
| 122, | 34 | 43 | 8.1 | 8.1 | 8.4 | 49 | 51 | 53 | — .3 | — |
| 123, | 23 | 43 | 8.1 | 8.1 | 8.0 | 49 | 51 | 50 | .1 | — |
| 124, | 36 | 45 | 8.3 | 8.4 | 9.6 | 51 | 53 | 60 | —1.2 | — |
| 125, | 14 | 47 | 8.4 | 8.6 | 7.8 | 54 | 54 | 49 | .8 | — |
| 126, | 57 | 47 | 8.4 | 8.6 | 8.6 | 54 | 54 | 54 | 0 | — |
| 127, | 20 | 47 | 8.4 | 8.6 | 9.0 | 54 | 54 | 56 | — .4 | — |
| 128, | 25 | 47 | 8.4 | 8.6 | 8.2 | 54 | 54 | 51 | .4 | — |
| 129, | 20 | 47 | 8.4 | 8.6 | 9.0 | 54 | 54 | 56 | — .4 | — |
| 130, | 26 | 48 | 8.5 | 8.8 | 7.8 | 55 | 55 | 49 | 1.0 | — |
| 131, | 21 | 48 | 8.5 | 8.8 | 9.6 | 55 | 55 | 60 | — .8 | — |

TABLE I. — *Point Scale and Binet Data upon 200 Feeble-minded — Con.*GIRLS — *Con.*

| CASE NUMBER. | Chronological Age. | CHILD POINT SCALE
— MENTAL AGE. | | | Binet Mental Age. | Coefficient of Intelligence. | INTELLIGENCE
QUOTIENT. | | Difference between Point
Scale Mental Age and
Binet Mental Age. | Adult Point Scale Score. |
|--------------|--------------------|------------------------------------|------------|------------|-------------------|------------------------------|---------------------------|--------|---|--------------------------|
| | | Score. | Old Norms. | New Norms. | | | Point Scale. | Binet. | | |
| 132, | 26 | 49 | 8.5 | 8.9 | 9.6 | 56 | 56 | 60 | — .7 | — |
| 133, | 28 | 50 | 8.6 | 9.0 | 9.0 | 57 | 56 | 56 | 0 | — |
| 134, | 21 | 50 | 8.6 | 9.0 | 8.8 | 57 | 56 | 55 | .2 | — |
| 135, | 18 | 50 | 8.6 | 9.0 | 9.2 | 57 | 56 | 58 | — .2 | — |
| (136), | 19 | 52 | 8.7 | 9.3 | 8.2 | 59 | 58 | 51 | 1.1 | — |
| 137, | 27 | 54 | 8.9 | 9.6 | 10.2 | 61 | 60 | 64 | — .6 | — |
| 138, | 16 | 55 | 8.9 | 9.7 | 10.4 | 65 | 61 | 65 | — .7 | — |
| 139, | 33 | 55 | 8.9 | 9.7 | 10.2 | 63 | 61 | 64 | — .5 | — |
| 140, | 21 | 57 | 9.2 | 10.0 | 10.6 | 65 | 63 | 66 | — .6 | — |
| 141, | 24 | 57 | 9.2 | 10.0 | 8.6 | 65 | 63 | 54 | 1.4 | — |
| 142, | 26 | 58 | 9.3 | 10.1 | 10.2 | 66 | 63 | 64 | — .1 | — |
| 143, | 26 | 58 | 9.3 | 10.1 | 10.0 | 66 | 63 | 63 | .1 | — |
| 144, | 19 | 58 | 9.3 | 10.1 | 9.6 | 66 | 63 | 60 | .5 | — |
| 145, | 30 | 58 | 9.3 | 10.1 | 10.0 | 66 | 63 | 63 | .1 | — |
| 146, | 27 | 59 | 9.5 | 10.3 | 9.8 | 67 | 64 | 61 | .5 | — |
| 147, | 20 | 59 | 9.5 | 10.3 | 9.8 | 67 | 64 | 61 | .5 | — |
| 148, | 25 | 60 | 9.7 | 10.4 | 9.0 | 68 | 65 | 56 | 1.4 | — |
| 149, | 35 | 60 | 9.7 | 10.4 | 9.2 | 68 | 65 | 68 | 1.2 | — |
| 150, | 29 | 60 | 9.7 | 10.4 | 9.0 | 68 | 65 | 56 | 1.4 | — |
| 151, | 17 | 61 | 9.8 | 10.5 | 10.4 | 76 | 66 | 65 | .1 | — |
| 152, | 22 | 61 | 9.8 | 10.5 | 10.0 | 69 | 66 | 63 | .5 | — |
| 153, | 30 | 62 | 10.0 | 10.7 | 9.8 | 70 | 67 | 61 | .9 | 20 |
| 154, | 13.2 | 62 | 10.0 | 10.7 | 10.4 | 83 | 81 | 79 | .3 | — |
| 155, | 32 | 62 | 10.0 | 10.7 | 9.6 | 70 | 67 | 60 | 1.1 | — |
| 156, | 26 | 63 | 10.3 | 10.8 | 9.0 | 72 | 68 | 56 | 1.8 | — |
| 157, | 25 | 63 | 10.3 | 10.8 | 9.2 | 72 | 68 | 58 | 1.6 | — |
| 158, | 24 | 65 | 11.0 | 11.2 | 10.2 | 74 | 70 | 64 | 1.0 | 29 |
| 159, | 31 | 66 | 11.1 | 11.4 | 9.8 | 75 | 71 | 61 | 1.6 | — |
| 160, | 24 | 66 | 11.1 | 11.4 | 9.4 | 75 | 71 | 59 | 2.0 | — |
| 161, | 21 | 67 | 11.2 | 11.5 | 10.2 | 76 | 72 | 64 | 1.3 | — |
| 162, | 32 | 67 | 11.2 | 11.5 | 10.4 | 76 | 72 | 65 | 1.1 | — |

TABLE I. — *Point Scale and Binet Data upon 200 Feeble-minded — Con.*GIRLS — *Con.*

| CASE NUMBER. | Chronological Age. | CHILD POINT SCALE
— MENTAL AGE. | | | Binet Mental Age. | Coefficient of Intelligence. | INTELLIGENCE QUOTIENT. | | Difference between Point Scale Mental Age and Binet Mental Age. | Adult Point Scale Score. |
|--------------|--------------------|------------------------------------|------------|------------|-------------------|------------------------------|------------------------|--------|---|--------------------------|
| | | Score. | Old Norms. | New Norms. | | | Point Scale. | Binet. | | |
| 163, | 28 | 67 | 11.2 | 11.5 | 10.2 | 76 | 72 | 64 | 1.3 | 29 |
| 164, | 31 | 68 | 11.3 | 11.7 | 10.6 | 77 | 73 | 66 | 1.1 | — |
| 165, | 39 | 68 | 11.3 | 11.7 | 8.6 | 77 | 73 | 54 | 3.1 | — |
| 166, | 37 | 68 | 11.3 | 11.7 | 10.0 | 77 | 73 | 63 | 1.7 | 18 |
| 167, | 23 | 68 | 11.3 | 11.7 | 11.0 | 77 | 73 | 69 | .7 | — |
| 168, | 16 | 69 | 11.3 | 11.9 | 10.2 | 82 | 74 | 64 | 1.7 | — |
| 169, | 25 | 69 | 11.3 | 11.9 | 10.0 | 78 | 74 | 63 | 1.9 | 32 |
| 170, | 24 | 70 | 11.4 | 12.1 | 11.2 | 80 | 76 | 70 | 1.1 | 32 |
| 171, | 27 | 70 | 11.4 | 12.1 | 10.8 | 80 | 76 | 68 | 1.3 | — |
| 172, | 19 | 71 | 11.5 | 12.3 | 11.0 | 81 | 77 | 69 | 1.3 | 26 |
| 173, | 22 | 72 | 11.6 | 12.5 | 11.0 | 82 | 78 | 69 | 1.5 | — |
| 174, | 31 | 72 | 11.6 | 12.5 | 10.6 | 82 | 78 | 66 | 1.9 | 26 |
| 175, | 20 | 72 | 11.6 | 12.5 | 10.6 | 82 | 78 | 66 | 1.9 | 33 |
| 176, | 23 | 72 | 11.6 | 12.5 | 10.6 | 82 | 78 | 66 | 1.9 | 40 |
| 177, | 21 | 73 | 11.7 | 12.8 | 10.2 | 83 | 80 | 64 | 2.6 | 28 |
| 178, | 29 | 73 | 11.7 | 12.8 | 11.0 | 83 | 80 | 69 | 1.7 | 36 |
| 179, | 26 | 73 | 11.7 | 12.8 | 10.6 | 83 | 80 | 66 | 2.2 | 41 |
| 180, | 24 | 73 | 11.7 | 12.8 | 10.2 | 83 | 80 | 64 | 2.6 | 40 |
| 181, | 17 | 74 | 11.8 | 13.0 | 10.6 | 85 | 81 | 66 | 2.4 | 41 |
| 182, | 15.9 | 77 | 12.0 | 13.7 | 9.2 | 93 | 86 | 58 | 4.5 | 32 |
| 183, | 21 | 77 | 12.0 | 13.7 | 9.2 | 88 | 86 | 58 | 4.5 | 42 |
| 184, | 22 | 79 | 13.0 | 14.2 | 11.2 | 90 | 89 | 70 | 3.0 | 42 |
| 185, | 25 | 79 | 13.0 | 14.2 | 11.2 | 90 | 89 | 70 | 3.0 | 40 |
| 186, | 27 | 79 | 13.0 | 14.2 | 10.6 | 90 | 89 | 66 | 3.6 | 27 |
| 187, | 25 | 80 | 13.5 | 14.5 | 11.2 | 91 | 90 | 70 | 3.3 | 54 |
| 188, | 27 | 80 | 13.5 | 14.5 | 11.6 | 91 | 90 | 73 | 2.9 | 32 |
| 189, | 32 | 82 | 15.0 | 15.2 | 11.0 | 93 | 95 | 69 | 4.2 | 56 |
| 190, | 20 | 83 | 15.5 | 15.5 | 10.6 | 94 | 97 | 66 | 4.9 | 52 |
| 191, | 17 | 83 | 15.5 | 15.5 | 11.2 | 98 | 97 | 70 | 4.3 | 47 |
| 192, | 17 | 83 | 15.5 | 15.5 | 10.4 | 98 | 97 | 65 | 5.1 | 49 |
| 193, | 26 | 84 | 16.0 | 16.0 | 11.4 | 97 | 100 | 71 | 4.6 | 41 |

TABLE I. — *Point Scale and Binet Data upon 200 Feeble-minded — Con.*
GIRLS — Con.

| CASE NUMBER. | Chronological Age. | CHILD POINT SCALE
— MENTAL AGE. | | | Binet Mental Age. | Coefficient of Intelligence. | INTELLIGENCE
QUOTIENT. | | Difference between Point
Scale Mental Age and
Binet Mental Age. | Adult Point Scale Score. |
|----------------|--------------------|------------------------------------|------------|------------|-------------------|------------------------------|---------------------------|--------|---|--------------------------|
| | | Score. | Old Norms. | New Norms. | | | Point Scale. | Binet. | | |
| 194, | 16.8 | 84 | 16.0 | 16.0 | 11.0 | 98 | 100 | 69 | 5.0 | 59 |
| (195), | 20 | 85 | 16.5 | 16.3 | 10.4 | 97 | 102 | 65 | 6.1 | 47 |
| 196, | 33 | 85 | 16.5 | 16.3 | 10.8 | 97 | 102 | 68 | 5.5 | — |
| 197, | 21 | 86 | 17.0 | 16.8 | 11.6 | 98 | 105 | 72 | 5.2 | 47 |
| 198, | 27 | 89 | 18.+ | 18.+ | 11.2 | 101 | 113 | 70 | 6.8+ | 44 |
| 199, | 22 | 89 | 18.+ | 18.+ | 11.4 | 101 | 113 | 71 | 6.6+ | 45 |
| 200, | 19 | 92 | 18.+ | 18.+ | 11.4 | 105 | 113 | 71 | 6.6+ | 54 |

Table I presents our data. In the succeeding columns are given: (1) case number; (2) chronological age; (3) the child Point Scale score (total credits); (4) the mental age corresponding to the score, according to original norms;* (5) the mental age using corrected norms; (6) the Binet mental age; (7) the coefficient of intelligence (attained Point Scale score divided by score expected at chronological age, adults 88 points, 18 years); (8) the Point Scale intelligence quotient (Point Scale mental age divided by chronological age, adults given age 16); (9) the Binet intelligence quotient (adult, 16 years); (10) the difference between the Point Scale age and the Binet age; (11) the adult Point Scale score.

That the distribution of cases by mental age is noticeably different, according to whether old or new norms are used is evident from the summary given by Table II, where with change from old to new norms the mode of the total distribution moves two years upward, 8.0–8.9 to 10.0–10.9.

* See R. M. Yerkes, J. W. Bridges and R. S. Hardwick: "A Point Scale for measuring Mental Ability."

TABLE II. — *Distribution of Cases at Various Mental Ages.*

| | 4.0-4.9. | 5.0-5.9. | 6.0-6.9. | 7.0-7.9. | 8.0-8.9. | 9.0-9.9. | 10.0-10.9. | 11.0-11.9. |
|----------------------|----------|----------|----------|----------|----------|----------|------------|------------|
| Point Scale: — | | | | | | | | |
| Old norms, | 1 | 7 | 6 | 15 | 65 | 35 | 10 | 38 |
| New norms, | 1 | 4 | 9 | 16 | 32 | 34 | 40 | 22 |
| Binet, | 0 | 1 | 7 | 18 | 39 | 61 | 54 | 19 |

| | 12.0-12.9. | 13.0-13.9. | 14.0-14.9. | 15.0-15.9 (or 15+). | 16.0-16.9. | 17.0-17.9. | 18.0+. |
|----------------------|------------|------------|------------|---------------------|------------|------------|--------|
| Point Scale: — | | | | | | | |
| Old norms, | 2 | 6 | 1 | 14 | — | — | — |
| New norms, | 16 | 5 | 7 | 5 | 5 | 0 | 4 |
| Binet, | 1 | — | — | — | — | — | — |

There is no selective factor known to the institution authorities which would explain the relatively small number of cases at 10.0-10.9 (old norms). The distribution of the cases by Binet ages shows no evidence of a gap at or near this age. The gap appears, therefore, to be due to the incorrectness of the older norms, and our finding that this gap disappears when new norms are used may be considered a further justification for the use of the new norms at this and the adjacent ages.

Forty-two cases with mental ages above 12 (11 boys and 31 girls, 16 and 46 per cent, respectively, of the high-grade groups) is a surprisingly large number. In the case of the girls particularly, however, it should be noted that probably about half of those over 9 mentally would not have found themselves in the institution had it not been for delinquencies. Seven of the 31 girls have definite histories of delinquency. One also is probably psychotic. Another, a negress who has since died, had the appearance of a white girl. In consequence she was forced when outside the institution to compete with white requirements. She would not under more natural requirements have been called feeble-minded. Of the 22 other girls, 2 have been discharged, and 5 are out on trial. So far as known they are doing well under supervision. The remaining 15 are still at the school. Of the 11 boys, 3 have been discharged. One of these is now diagnosed as

not feeble-minded. Two others, 1 of whom is diagnosed probably psychotic, have run away. Of the rest, 1 is temporarily released, 1 has just been allowed to leave on trial, 1 has been on trial but has been returned unsuccessful, and 3 are still at the institution. Thirteen of these cases, then, either can be diagnosed as not feeble-minded or are proving that they can get along outside the institution if under supervision. Of the remaining 29 cases, 7 are delinquent, and very likely emotionally rather than intellectually defective, leaving the cases unquestioned, 22. The probability is that with increasing years a few more will be discharged or let out on trial. We may then say that there are about 20 cases in our group who are considered feeble-minded, and who give a mental age of over 12. Since our work was done, many more children who do not belong to the delinquent group and who have mental ages over 12 have been admitted to the school. It is therefore dangerous to say that all persons over 12 years mental age are thereby indicated as not truly feeble-minded. It is also dangerous to say that no person in a school for the feeble-minded will ever be able to get along by himself in the world.

COMPARISON OF THE COEFFICIENT OF INTELLIGENCE AND THE INTELLIGENCE QUOTIENT.

The diagnostic value of the coefficient of intelligence and of the intelligence quotient, as compared with that of the mental age, has of late been emphasized. The coefficient of intelligence (C I) of .70 has been placed tentatively as the "upper limit of inadequacy or inferiority" below which individuals are "socially burdensome, ineffective and usually a menace to social welfare," and .70 to .80 intelligence quotient (I Q) is regarded as characterizing "borderline deficiency, often classifiable as feeble-mindedness" and below .70 I Q as "definite feeble-mindedness."*

We give in Table III the distribution of the C I's and I Q's for our groups.

* For use of the coefficient of intelligence, see R. M. Yerkes and L. M. Wood, *op. cit.*, pp. 602, 606. For use of the intelligence quotient, see L. M. Terman: "Measurement of Intelligence," 1916, pp. 79, 87 *ff.*

TABLE III. — *Distribution of Cases by Coefficient of Intelligence and by Intelligence Quotient.*

| | C I (ADULT 88 POINTS). | | | I Q (ADULT 16 YEARS). | | |
|-------------------|------------------------|--------|---------|-----------------------|--------|---------|
| | Boys. | Girls. | Totals. | Boys. | Girls. | Totals. |
| 21-30, | 1 | 3 | 4 | 0 | 0 | 0 |
| 31-40, | 3 | 10 | 13 | 2 | 8 | 10 |
| 41-50, | 8 | 10 | 18 | 4 | 12 | 16 |
| 51-60, | 15 | 13 | 28 | 21 | 17 | 38 |
| 61-70, | 31 | 17 | 48 | 43 | 20 | 63 |
| 71-80, | 24 | 16 | 40 | 16 | 22 | 38 |
| 81-90, | 12 | 16 | 28 | 9 | 9 | 18 |
| 91-100, | 5 | 12 | 17 | 4 | 6 | 10 |
| 101-, | 1 | 3 | 4 | 1 | 6 | 7 |

From Table III it is evident that the use of the C I gives a greater number of high grades than does the I Q (89 versus 73 cases above .70). Indeed, according to the C I rating, 21 cases are classifiable as normal or supernormal,* 68 as subnormal, and only 111 cases have the low intelligence of the feeble-minded. If we use the I Q, we find 127 with the intelligence of the feeble-minded, and 38 more who are probably feeble-minded, 18 who are dull and probably not feeble-minded, and 17 who have normal intelligence. We have suggested above that some of the children at the school (perhaps 22) may be classed above the feeble-minded grade. This leaves at least 178 of our group who are considered by the authorities at the school as definitely feeble-minded. The I Q expresses this fact more truly than does the C I. Moreover, if we should accept a .70 C I as the limit of feeble-mindedness this would imply a score of 62 and a mental age of 10.0 as critical in adults. This limit is evidently, therefore, far too low.

From a theoretical point of view there seem to be a number of arguments in favor of the I Q. In the first place there are more chances of error in the use of the C I than there are in that of the I Q. Dr. Yerkes has pointed out † that "The reliability of the quotient depends upon several variable factors, important among which are the accuracy of the measurement of intelligence,

* See Yerkes and Wood, *op. cit.*, p. 601.† Yerkes and Wood, *op. cit.*, p. 594.

and the trustworthiness of chronological age." This must also hold true for the C I. The question of chronological age makes one error in the I Q, that is, it may change the divisor; but it makes two errors in the C I: first, the given age may be wrong; second, the number of points corresponding to that age may be wrong.

The fact that the gaining of a point at the higher ages means very little so far as the C I is concerned ($\frac{8.7}{8.8}$ and $\frac{8.8}{8.8}$ at 18 show the slight difference .01, while $\frac{2.1}{2.2}$ and $\frac{2.2}{2.2}$ at 5 show the much larger difference .05), together with greater probability of more points difference at 5, implies that individuals are much more alike in intelligence at 18 than the same individuals were at 5. This difference has been noticed by Yerkes and Wood who state * that this outcome is justified by application of the scale. "The results make it appear that extraordinary intellectual ability is fairly common up to 8 years, and then becomes very uncommon." It would seem that any results which make any such astonishing statement seem true must be questionable. The authors, to be sure, state that "Evidently . . . the reliability of our coefficient and its value for purposes of comparison are conditioned by characteristics of range." Now if the C I is to mean different things at different ages, then it has the fault that is found with the statement of difference between chronological and mental ages, namely, that a retardation of 2 years at chronological age 5 is more serious than a retardation of 2 years at chronological age 12. Yerkes and Wood also note that they would not have predicted Terman's steadiness of I Q. The reason for this statement is not clear. If intelligence is ability to get along, to compete on equal terms with others of the given chronological age and same general social condition, then intelligence measured in I Q's and C I's should be a relative matter of distribution within the age groups. We should expect a certain proportion of the population to possess it, and should expect this proportion to be approximately constant at all ages.

From a practical point of view the I Q has the advantage of being the apparent limit toward which the C I approaches as the Point Scale norms are revised. For the years 7 to 13 (for which ages Dr. Yerkes says the Point Scale is most reliable) we have the average number of points awarded to each to be $6.9 + 2.2$ by the old norms and $6.4 + 1.2$ by the new. This means that correction of the norms for the Point Scale is making more equal

* *Op. cit.*, p. 598.

distribution of points per year. Now, if the distribution of points is approaching an arithmetical progression, our table of norms is approaching two arithmetical progressions (one the years mental age, and the other the number of points corresponding to each mental age) differing in the size step but dependent upon one another. Let us then consider these two progressions. The I Q is calculated from the one (the mental ages); the C I from the other (the scores). Now if one progression varies with the other, then the I Q and the C I will also vary together and therefore have the same meaning. At present, of course, the column of scores does not vary exactly with the mental ages, but, as we have said, revisions in the norms are turning it strongly in this direction. So that it would seem simpler, as well as more correct in theory, to accept the I Q as the limit toward which the C I is approaching and to use the I Q now in place of the C I.

COMPARISON OF THE RATINGS BY THE POINT SCALE AND BINET EXAMINATIONS.

A detailed comparison of the mental ages given by the two scales would be out of place here, because since we began this work more careful comparisons have been made by other investigators. From the data which we have, the average Point Scale mental age for years 5.5 to 6.4 (Point Scale mental age) is 1.3 years lower; for 6.5 to 7.4 it is .8 lower; for 7.5 to 8.4 it is .3 lower; for 8.5 to 10.4 it is .6 higher; for 10.5 to 12.4 it is 1.0 higher and for ages above 12.5 it exceeds the Binet by increasingly greater amounts. The differences in the upper part of the scale are, of course, only natural since the Binet ratings were obtained from the Goddard revision, in which it is impossible to attain a mental age higher than 12, while on the Point Scale the children could be graded as high as 18.

For the same reason as that given in the preceding paragraph we shall give no detailed discussion of the Binet and Point Scale I Q's. In order to eliminate the errors which would be introduced by taking the limit of the Binet examination (12) as adult mental age, we used 16 as the divisor in our computation of I Q's in each scale. The median of the Point Scale I Q's is .65; that of the Binet I Q's is .61. This slight difference may be explained by the fact that the method used prevents the attainment by an adult of a Binet I Q of more than .75 since the highest mental age possible is 12, and therefore lowers the

number of large Binet without affecting Point Scale I Q's. Moreover, the Binet I Q's correlate by rank differences to .84 with the Point Scale I Q's.

This brief comparison of results by the two scales shows: (1) between the Point Scale mental ages of 6.5 and 12.4 the average difference between Point Scale and Binet mental ages is not more than a year; (2) if the I Q is used instead of the mental age, the results of the two scales agree very closely.

COMPARISON OF THE REACTIONS OF THE NORMAL AND THE FEEBLE-MINDED. THE "VARIATION TOTAL."

Our data furnish a basis for comparing the typical reactions of the feeble-minded with those of the normal. Dr. Yerkes very kindly allowed us to study the records of 503 cases which he used in the original calculation of his norms for English-speaking subjects. From these records we determined the distribution of scores for each test for each age, counting 4.5 to 5.4 as age 5, etc. The mode, of course, in some places included only a small number of the cases, and we therefore selected the most frequent neighboring scores widely enough to include 75 per cent of the cases. That is, we determined what central scores taken together made up 75 per cent of the replies at a given age, by using the modal score, and, if necessary, the neighboring scores. When neighboring scores had to be used the largest ones were taken first. If there was a second mode or if there was a second large number, differing by not more than 1 or 2 from the mode, this was included. The table of scores making up 75 per cent of replies was then smoothed, and the final numbers which were settled upon as "expected scores for normal subjects" are given in Table IV. Modal scores are italicized and the per cent of cases included in any group of scores is indicated by the number given in parentheses. The only exception to this is test 6. The original examination gave slightly different scoring for this test so that it was impossible to say exactly what its modes were for the later years.

TABLE IV. — *Expected Score for Each Test at Each Age (Normal Children).*

| NUMBER OF
TEST. | SCORE. | | | | |
|--------------------|-----------------|--------------|--------------|---------------|------------------|
| | 18-24. | 25-30. | 31-37. | 38-45. | 46-52. |
| 1, | 2, 3 (63) | 3 (47) | 3 (74) | 3 (89) | 3 (100) |
| 2, | 1, 2 (57) | 3, 4 (68) | 3, 4 (70) | 4 (58) | 4 (71) |
| 3, | 1 (57) | 1 (74) | 3 (60) | 3 (51) | 3 (62) |
| 4, | 2, 3 (89) | 2, 3 (74) | 3 (51) | 3 (44) | 3 (44) |
| 5, | 0 (89) | 0 (71) | 0, 1, 2 (77) | 2, 3, 4 (80) | 4 (78) |
| 6, | 2, 4 | 2, 4 | 2, 4 | 2, 4 | 2, 4 |
| 7, | 3, 4, 5, 6 (91) | 6 (50) | 6 (59) | 6 (79) | 6 (78) |
| 8, | 0 (91) | 0 (79) | 0 (70) | 0, 1, 2 (100) | 0, 1, 2 (100) |
| 9, | 0, 1 (74) | 1, 2 (74) | 1, 2, 3 (81) | 2, 3, 4 (70) | 4, 5 (53) |
| 10, | 2, 3, 4 (69) | 2, 3, 4 (76) | 2, 3, 4 (59) | 4 (69) | 4 (53) |
| 11, | 0 (60) | 0, 1 (59) | 0, 1 (62) | 0, 1, 2 (75) | 0, 1, 2, 4 (100) |
| 12, | 1 (49) | 1 (44) | 1, 2 (70) | 2 (37) | 2, 3 (84) |
| 13, | 0 (63) | 0 (53) | 0 (45) | 1 (42) | 2 (44) |
| 14, | 0 (100) | 0 (100) | 0 (96) | 0 (94) | 0, 2 (78) |
| 15, | 0 (57) | 0, 1 (71) | 1, 2 (64) | 2, 3 (63) | 2, 3 (67) |
| 16, | 0 (94) | 0 (79) | 0 (79) | 0 (54) | 0 (44) |
| 18,* | 0 (100) | 0 (100) | 0 (100) | 0 (99) | 0 (91) |
| 19, | 0 (100) | 0 (100) | 0 (100) | 0 (99) | 0 (80) |
| 20, | 0 (94) | 0 (88) | 0 (85) | 0 (68) | 1 (47) |

* 17 was omitted from original paper.

TABLE IV. — *Expected Score for Each Test at Each Age (Normal Children) — Continued.*

| NUMBER OF
TEST. | SCORE. | | | | |
|--------------------|---------------|--------------|--------------|--------------|--------------|
| | 53-60. | 61-66. | 67-71. | 72-75. | 76-79. |
| 1, | 3 (100) | 3 (100) | 3 (100) | 3 (100) | 3 (100) |
| 2, | 4 (77) | 4 (100) | 4 (100) | 4 (100) | 4 (100) |
| 3, | 3 (85) | 3 (100) | 3 (100) | 3 (100) | 3 (100) |
| 4, | 3, 4 (67) | 3, 4 (72) | 3, 4, 5 (97) | 3, 4, 5 (95) | 3, 4, 5 (97) |
| 5, | 4 (67) | 4 (100) | 4 (97) | 4 (100) | 4 (100) |
| 6, | 2, 4 | 2, 4 | 2, 4 | 2, 4 | 2, 4 |
| 7, | 6 (66) | 6 (62) | 6, 7 (77) | 6, 7, 8 (86) | 6, 7, 8 (81) |
| 8, | 2 (62) | 2 (79) | 2 (71) | 2 (76) | 2 (77) |
| 9, | 5 (39) | 5, 6 (77) | 5, 6 (94) | 6 (81) | 6 (87) |
| 10, | 4, 5 (62) | 4, 5, 6 (74) | 5, 6 (48) | 6, 7 (67) | 6, 7 (51) |
| 11, | 2, 3 (61) | 2, 3 (74) | 3 (55) | 3 (71) | 3 (74) |
| 12, | 2, 3, 4 (95) | 3, 4 (82) | 4 (55) | 4 (57) | 4 (71) |
| 13, | 2 (43) | 2, 3 (69) | 3, 4 (65) | 3, 4 (62) | 3, 4 (81) |
| 14, | 0, 2, 4 (100) | 2, 4 (85) | 2, 4 (81) | 4 (86) | 4 (81) |
| 15, | 2, 3 (54) | 3, 4 (67) | 4, 5, 6 (87) | 4, 5, 6 (81) | 4, 5, 6 (81) |
| 16, | 0, 1 (67) | 1, 2 (51) | 1, 2, 3 (65) | 1, 2, 3 (71) | 2, 3, 4 (77) |
| 17, | 1, 2 (64) | 1, 2 (51) | 2, 3 (68) | 3, 4 (67) | 3, 4 (74) |
| 18, | 0, 1, 2 (85) | 2 (59) | 2, 4 (77) | 2, 4 (86) | 4 (51) |
| 19, | 0, 2 (95) | 0, 2 (82) | 2, 4 (90) | 2, 4 (90) | 2, 4 (90) |
| 20, | 1 (61) | 1, 2 (74) | 2 (51) | 2 (29) | 2, 3 (68) |

TABLE IV. — *Expected Score for Each Test at Each Age (Normal Children)* — Concluded.

| NUMBER OF
TEST. | SCORE. | | | | |
|--------------------|------------------|--------------|---------------|--------------|-----------|
| | 80-82. | 83-85. | 86.* | 87-88. | 89-100. |
| 1. | 3 (100) | 3 (100) | 3 (100) | 3 (100) | 3 (100) |
| 2. | 4 (100) | 4 (100) | 4 (100) | 4 (100) | 4 (100) |
| 3. | 3 (100) | 3 (100) | 3 (100) | 3 (100) | 3 (100) |
| 4. | 4, 5 (95) | 4, 5 (85) | 4, 5 (67) | 4, 5 (93) | 5 (86) |
| 5. | 4 (100) | 4 (100) | 4 (100) | 4 (100) | 4 (100) |
| 6. | 2, 4 | 2, 4 | 2, 4 | 2, 4, 6 | 2, 4, 6 |
| 7. | 6, 7, 8, 9 (100) | 8, 9 (55) | 8, 9 (83) | 8, 9 (57) | 8, 9 (76) |
| 8. | 2 (89) | 2 (95) | 2 (100) | 2 (93) | 2 (97) |
| 9. | 6 (89) | 6 (80) | 6 (100) | 6 (100) | 6 (97) |
| 10. | 6, 7 (58) | 6, 7, 8 (90) | 6, 7, 8 (67) | 7, 8 (71) | 7, 8 (72) |
| 11. | 3 (68) | 3 (75) | 3 (67) | 3 (86) | 3 (66) |
| 12. | 4 (63) | 4 (75) | 4 (83) | 4 (100) | 4 (90) |
| 13. | 3, 4 (95) | 4 (80) | 4 (83) | 4 (93) | 4 (83) |
| 14. | 4 (89) | 4 (85) | 4 (83) | 4 (93) | 4 (93) |
| 15. | 6, 7, 8 (100) | 6, 7, 8 (90) | 6, 7, 8 (100) | 6, 7, 8 (93) | 8 (72) |
| 16. | 3, 4 (42) | 3, 4 (75) | 4 (50) | 4 (57) | 4 (62) |
| 17. | 3, 4, 5 (100) | 3, 4, 5 (85) | 3, 4, 5 (100) | 4, 5 (79) | 4, 5 (86) |
| 18. | 4 (42) | 4, 6 (80) | 4, 6 (100) | 6 (50) | 6 (72) |
| 19. | 4 (68) | 4 (60) | 4 (33) | 4 (64) | 6 (66) |
| 20. | 2, 3, 4 (89) | 2, 3, 4 (65) | 3, 4, 5 (83) | 3, 4, 5 (71) | 5, 6 (66) |

* Only six cases.

From the table of expected scores we have obtained a “variation total” (V T), *i.e.*, the sum of variations from the expected scores of that mental age for each normal case, for each of our 200 feeble-minded cases at the Waverley School, and for a group of patients at the psychopathic hospital. Patients diagnosed as feeble-minded are grouped in Table V with the Waverley cases. This table gives the distribution of variation totals for all the cases. In the last column will be found the distribution for a number of psychoses grouped together, — the cases of dementia præcox, alcoholic psychosis, epileptic psychosis, syphilitic psychosis, unclassified paranoid psychosis, cases pronounced by all the staff to be psychotic but where there was disagreement as to the particular psychosis in question, and a few scattering cases of arteriosclerotic psychosis, drug psychosis, etc. From this group we have excluded our cases of psychopathic personality, manic-depressive insanity, hysteria and psychoneurosis, because these groups are in general so near the normal.

The medians, upper and lower quartiles for the different psychoses are given in the following condensed table: —

| DIAGNOSES. | Median. | Lower
Quartile. | Upper
Quartile. |
|-------------------------------------|---------|--------------------|--------------------|
| Normal, | 7 | 5 | 9 |
| Not psychotic, | 7 | 6 | 10 |
| Retarded or subnormal, | 9 | 7 | 12 |
| Feeble-minded, | 9 | 7 | 11 |
| Psychopathic personality, | 5 | 3 | 7 |
| Manic-depressive, | 8 | 5 | 12 |
| Psychoneurosis, | 9 | 7 | 11 |
| Dementia præcox, | 9 | 7 | 13 |
| Alcoholic psychosis, | 12 | 10 | 14 |
| Syphilitic psychosis, | 10 | 8 | 14 |
| Unclassified paranoid, | 8 | 7 | 9 |
| Unclassified psychosis, | 9 | 8 | 12 |
| Grouped psychoses, | 10 | 7 | 14 |

The extremes lie with the psychopathic personalities (median 5) and the alcoholic psychoses (median 12). The fact that the psychopathic personalities seem to vary less from the expected scores for normal than do the normals themselves may be explained easily. The psychopathic personalities give total scores on the Point Scale ranging from 66 to 96 with the median at 87, while the normals range from 18 to 97 with the median at 55. It is evident that the higher the total score is the less, roughly speaking, is the chance for variation. Thus if a subject gives a total score of 95 he can lose only 5 points throughout the 20 tests. He cannot get more than is expected in any test because (see Table IV) for total scores between 89 and 100 the highest score possible for each test is included under the expected scores. He, therefore, cannot possibly have a variation total of more than 5.* We have, then, in our psychopathic personalities a group of adults grading at adult mental age, who would probably not be less variable than a group of normal adults, but are less variable than our group of normal school children.

* This may seem to suggest that variation totals should have a different significance for different total scores. We feel, however, that this is not true except for the extremely high scores. For our normals we have comparable distributions for different sizes of total score except that for scores above 91 we have no variation totals larger than 6.

TABLE V. — *Distribution of Variation Totals for Different Diagnoses.*

| VI
VARIATION
TOTALS. | Normal. | Not Psychotic. | Retarded or Sub-
normal. | Feeble-minded. | Psychopathic Per-
sonality. | Manic-depressive. | Psychoneurosis. | Dementia Præcox. | Alcoholic
Psychoses. | Epileptic
Psychoses. | Syphilitic
Psychoses. | Unclassified
Paranoid. | Unclassified
Psychoses. | Grouped
Psychoses. |
|----------------------------|---------|----------------|-----------------------------|----------------|--------------------------------|-------------------|-----------------|------------------|-------------------------|-------------------------|--------------------------|---------------------------|----------------------------|-----------------------|
| 0, | 2 | 1 | - | - | 1 | - | 1 | - | 1 | - | - | 1 | 1 | 3 |
| 1, | 12 | 2 | - | 1 | 3 | - | 1 | - | - | - | - | - | - | - |
| 2, | 17 | 5 | - | 3 | 6 | - | - | - | 1 | - | - | - | - | 1 |
| 3, | 28 | 11 | - | 9 | 3 | 1 | - | 2 | - | - | - | - | 1 | 4 |
| 4, | 50 | 6 | 1 | 13 | 4 | 1 | - | 4 | 1 | 2 | 1 | - | 1 | 9 |
| 5, | 77 | 13 | 1 | 31 | 5 | 2 | 1 | 1 | 1 | 3 | 1 | - | 3 | 9 |
| 6, | 61 | 20 | 5 | 33 | 6 | 1 | 2 | 4 | - | 1 | - | - | 3 | 9 |
| 7, | 71 | 17 | 9 | 39 | 3 | - | 2 | 5 | 2 | 2 | 2 | 2 | 8 | 22 |
| 8, | 50 | 19 | 6 | 50 | 4 | 3 | 1 | 7 | 2 | 2 | 1 | 2 | 11 | 25 |
| 9, | 46 | 14 | 10 | 35 | 1 | - | 2 | 6 | 2 | 2 | 1 | 1 | 6 | 20 |
| 10, | 37 | 15 | 7 | 49 | 1 | - | 3 | 4 | 4 | 1 | 2 | - | 5 | 17 |
| 11, | 23 | 6 | 5 | 23 | 2 | - | 1 | 3 | 7 | 2 | 1 | 1 | 4 | 18 |
| 12, | 13 | 8 | 4 | 21 | 2 | 1 | 3 | 1 | 3 | 1 | - | - | 5 | 11 |
| 13, | 4 | 1 | 3 | 27 | - | 1 | - | 5 | 3 | - | - | - | 2 | 10 |
| 14, | 5 | 1 | 3 | 17 | - | 2 | 1 | 3 | 5 | 1 | 1 | - | 5 | 16 |
| 15, | 1 | 4 | 5 | 14 | - | - | - | 1 | 1 | 1 | - | - | 3 | 7 |
| 16, | 2 | 2 | - | 7 | - | - | - | - | 3 | - | 3 | - | 3 | 10 |
| 17, | 2 | - | 1 | 2 | - | - | - | 3 | - | - | - | - | 1 | 4 |
| 18, | 1 | - | - | - | - | - | - | 2 | 2 | 2 | - | - | - | 6 |
| 19, | - | - | - | 2 | - | - | - | - | 1 | 1 | - | - | 1 | 4 |
| 20, | 1 | - | - | 2 | - | - | - | 2 | 2 | - | - | - | 1 | 6 |
| 21, | - | - | - | 1 | - | - | - | - | - | - | - | 1 | - | 1 |
| 22, | - | - | - | - | - | - | 1 | - | 1 | - | 1 | - | - | 2 |
| 23, | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 24, | - | - | - | 1 | - | - | - | - | - | - | - | - | 1 | 1 |
| 25, | - | - | - | - | - | - | - | - | 1 | - | - | - | - | 1 |
| 26, | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 27, | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - | 1 |
| Total cases, | 503 | 146 | 60 | 380 | 41 | 12 | 19 | 54 | 43 | 21 | 15 | 8 | 65 | 218 |

The alcoholic psychoses give by far the highest median V T. This high value is probably not a symptom of alcoholic psychosis itself, but rather of advancement of deterioration or depth of psychosis. Many persons, doubtless, would expect the dementia

præcox patients to show greater variability than the alcoholics, and in the majority of hospitals for the insane this would probably be true, but in the psychopathic hospital in Boston we have a rather selected group. The selection may be illustrated by statements concerning two classes: the alcoholics and the dementia præcox. The latter group find their way into institutions comparatively early in life. They show hallucinations and delusions, etc., before they have deteriorated markedly, and so by the time they are greatly deteriorated they are already in a state asylum and not likely to enter a "clearing house" like the psychopathic. Our dementia præcox cases, then, will be little deteriorated, and, unless decidedly schizophrenic, will not show large variations. The cases of alcoholic psychoses, on the contrary, do not come into the hospital until they are older and until their psychosis has begun to interfere definitely with their work. Besides the initial selection there is a further selection in the cases which are referred for psychological examination. The great majority of patients under age 25 are sent for this examination. This includes a great many cases of beginning dementia præcox, and practically none of beginning alcoholic psychosis. Of the more advanced cases, the alcoholics are more accessible, and so if the problem is one of degree of deterioration a deteriorated alcoholic will, in general, co-operate better than a deteriorated dementia præcox. This means that more deteriorated alcoholics will be referred to the psychological department and that of those referred we shall be able to use the record of a greater per cent of alcoholics than of dementia præcox.*

The above discussion may be interpreted to mean that we may expect larger variations from cases of psychosis of long standing and that in general our data err on the side of conservatism, *i.e.*, that probably we may expect an unselected group of psychotics to show greater V T's than the ones we have given.

We find from the table that the unclassified paranoid give small V T's. The diagnosis means, practically, that the patient has no symptoms other than paranoid ideas. Admittedly, then, said patient is not taken by the psychiatrists to be either deteriorated or markedly psychotic, and we find a small V T. The manic-depressives also give a comparatively small V T, but here we have a wide range with quartiles at 5 and 12.

On the whole, the outstanding feature of our table is that normals and "not psychotic" subjects give smaller V T's than

* In our computations we have thrown out all cases recorded as showing poor co-operation, and all those having any language difficulty.

do the feeble-minded, and that the feeble-minded give smaller V T's than do the deteriorated or the markedly psychotic patients.

We have computed the probable correctness of the difference * for our larger groups. The average V T's for these groups are —

| | Average. | Probable Error. |
|-------------------------------|----------|-----------------|
| Normals, | 6.8 | 2.03 |
| Not psychotic, | 7.6 | 2.44 |
| Feeble-minded, | 9.2 | 2.40 |
| Grouped psychotics, | 10.6 | 3.22 |

Probable correctness of differences between —

| | |
|--|-----|
| Normal and not psychotic, | .57 |
| Normal and feeble-minded, | .70 |
| Normal and psychotic, | .75 |
| Feeble-minded and psychotic, | .62 |
| Feeble-minded and not psychotic, | .62 |
| Psychotic and not psychotic, | .69 |

Plate I (a) gives the data in Table V in graphical form. We have grouped the V T's into the divisions 0-4, 5-9, 10-14, 15-19, 20-24, 25-29,

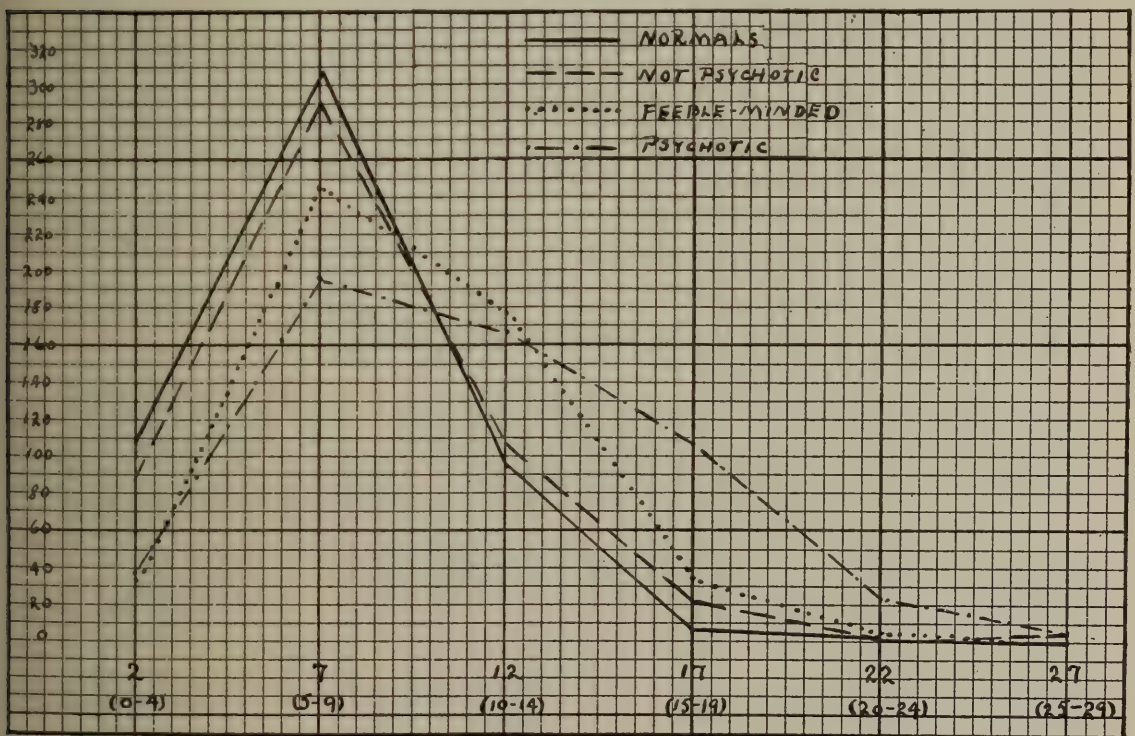


Plate I (a).

* Boring, E. G.: "The Number of Observations upon which a Limen may be based." A. J. T., 1916, Vol. XXVII, p. 317.

20-24, 25-29. We have moreover supposed that a larger number of cases in any one of our four large groups would give the same general distribution shown by the cases already examined; and we have consequently multiplied the figures for the "not psychotic" by 3.5, those for the feeble-minded by 1.3, and those for the psychotics by 2.3, to make these groups of the same size as our normal group.

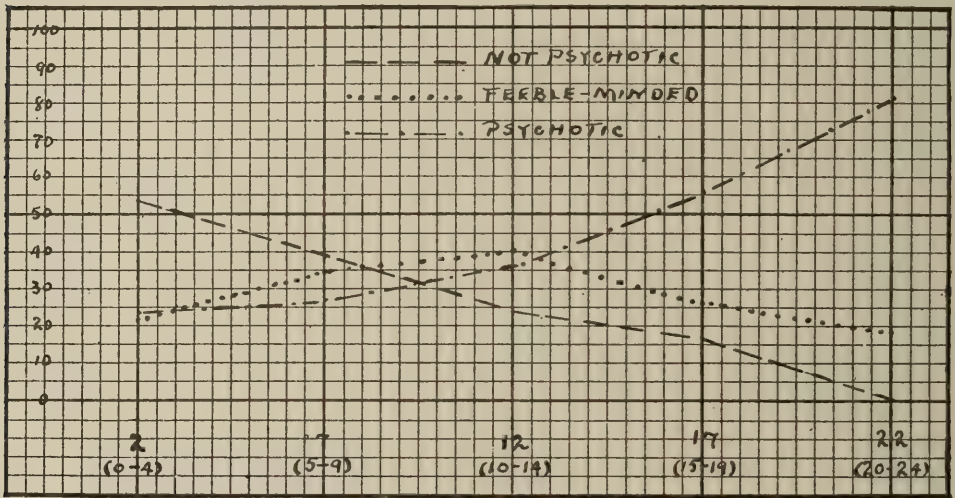


Plate I (b).

Plate I (b) shows the probability that a case having any given V T will belong to each of our large groups. Supposing 100 cases at each size V T and supposing equal numbers of the different diagnoses, then from the curves we may read the chance that any given case is feeble-minded, or psychotic, or not psychotic. Normals are not included for the obvious reason that patients are diagnosed not "normal" but "not psychotic." The table from which this plate was made is given below:—

Per Cent of Cases for Different Sizes Variation Totals found under the Different Diagnoses.

| VARIATION TOTALS. | Not Psychotic. | Feeble-minded. | Psychotic. |
|-------------------|----------------|----------------|------------|
| 0-4, | 54 | 22 | 24 |
| 5-9, | 39 | 34 | 27 |
| 10-14, | 24 | 40 | 26 |
| 15-19, | 17 | 27 | 56 |
| 20-24, | 0 | 19 | 81 |
| 25-29, | —* | — | — |

* Too few cases.

If we disregard the diagnosis "not psychotic," we may say roughly that cases giving V T's above 15 (and particularly above 20) are more likely to be psychotic than feeble-minded.

There are many other problems in variability which we hope to attack at some future time. First, there is the question of what variations we would get if our table of expected scores gave the score expected for each *part* of each test. It seems probable that epileptics would show greater variability by parts of tests than by wholes. Then there is the question of types within the psychoses. For example, are the hebephrenic dementia præcox more or less variable than the dementia simplex? Doubtless the paranoid dementia præcox would show small variation totals. There is the question of the variability of supernormal children. From our casual observation of a few such children, it would seem that they have high V T's. Many other problems arise and offer a large field for work.

TESTS WHICH ARE EASY FOR THE NORMAL OR FOR THE FEEBLE-MINDED.

If we compare Table IV of expected scores for the normals and a similar table for the feeble-minded, we find that given the same mental age, we expect higher scores from normals in tests 4 (repetition of digits), 6 (repetition of sentences), 9 (comparison of objects), 10 (concrete definitions), 13 (free association) and 14 (three words in one sentence), and higher scores from the feeble-minded in tests 7 (interpretation of pictures), 11 (resistance of suggestion), 12 (copying square and diamond) and 15 (comprehension of questions). These lists are drawn merely from observation of the two tables, and are not conclusive. They may be checked by approaching the problem by another path. If we take into account the algebraic sign of the variations of the feeble-minded scores from the normal expected score, we obtain the average deviations of the feeble-minded from the normal as follows: —

| TEST. | + | — | TEST. | + | — |
|---------------|------|-----|---------------|-----|-----|
| 1, | 0 | .06 | 11, | .14 | .32 |
| 2, | .01 | .26 | 12, | .21 | .11 |
| 3, | .04 | .07 | 13, | .17 | .55 |
| 4, | .15 | .24 | 14, | .05 | .28 |
| 5, | .03 | .26 | 15, | .70 | .04 |
| 6, | .08 | .06 | 16, | .50 | .10 |
| 7, | 1.18 | .07 | 17, | .25 | .16 |
| 8, | .04 | .22 | 18, | .30 | .19 |
| 9, | .09 | .53 | 19, | .39 | .13 |
| 10, | .24 | .18 | 20, | .35 | .16 |

We find then that the feeble-minded give scores higher than the normal in tests 6, 7, 10, 12, 15, 16, 17, 18, 19, 20, and scores lower than the normal in tests 1, 2, 3, 4, 5, 8, 9, 11, 13, 14. If we consider only the cases in which the difference is 10 or more, we have the feeble-minded superior in tests 7, 12, 15, 16, 18, 19, 20, and inferior in tests 2, 5, 8, 9, 11, 13, 14. When these lists are compared with the lists obtained by the first method used, we find that the two agree in calling tests 7, 12 and 15 easy for the feeble-minded, and tests 9, 13 and 14 hard for the feeble-minded. The only disagreement is in test 11, which is called easy in one list and hard in the other.*

We should suppose that superiority of the feeble-minded in certain tests would be due either to special training or to the experience brought with increasing chronological age. Terman † has summarized some of the conclusions made on the influence of the age factor. If we consider tendency for percentage of successes to increase with age as the equivalent of a tendency for the feeble-minded to pass the tests more easily than the normal, then we may say that of the Point Scale tests we should expect the feeble-minded to excel in comprehension of questions, definitions by use, and probably copying square and diamond; and to be inferior in repetition of 6 digits and of syllables, dissected sentences, 60 words in three minutes. This would mean that our feeble-minded should receive higher scores in tests 10 and 15, and probably in 12; and that they should receive lower scores in tests 4, 6, 13 and 18. On referring to our table, we find this upheld except in the case of 18 (dissected sentences).

In Appendix A we give a qualitative table of typical responses of feeble-minded at different mental ages.

DIFFICULTY OF THE DIFFERENT TESTS.

The question of which tests it is safe to omit in the examination of a patient who is evidently of very low grade depends upon the determination of which tests are most difficult. Some idea of this may be obtained from the table of expected scores. If we arrange for each year the tests in order of per cent of total

* Doll reports (New York meeting of the Am. Psych. Ass., December, 1916) that definitions (concrete and abstract), reactions to pictures, comparison of objects, memory span, absurdities, sentences containing 3 given words, and free association are easy for the feeble-minded; and that comparison of 2 weights, æsthetic comparison, copying square and diamond, missing parts, counting backward, arrangement of weights, and drawing designs from memory are hard for them. We agree with Doll on one point only, that the interpretation of pictures is easy for the feeble-minded.

† Terman, L. M.: "The Stanford Revision and Extension of the Binet-Simon Scale for Measuring Intelligence." Warwick & York, 1917, p. 143.

possible score which was attained, we find that, roughly speaking, the first ten tests are easier than the last ten, that test 1 is easiest of all, that tests 2 and 3 come next, and that 16, 17, 18, 19 and 20 are the hardest. Such a method, however, does not give results exact enough to use in determining the tests which may be omitted. If we take the original data on our feeble-minded for each test and find the average per cent of total possible score for each test attained by the 200 cases, we find that tests 1, 2 and 3 are the easiest; then come 5, 7 and 12; then 4, 8, 9, 10 and 11; then 6, 13, 14, 15, 16 and 17; and hardest of all are 18, 19 and 20. Since the whole of tests 4 and 6 is not given unless all preceding parts have been passed, we should not consider them in a comparison of the different tests. The other eighteen tests are found to be arranged in the Point Scale in the order of increasing difficulty, with the exception of test 12, which is easier than test 8 and harder than test 7.

The subdivisions are generally arranged in the Point Scale in order of increasing difficulty. Some exceptions to this rule are that in test 10, part (c) is the easiest of all; in test 17, part (b) is the easiest; in test 19, part (b) is easiest; and in test 20, part (c) is easier than (b), and (f) is easier than (d) or (e).*

In this connection it may be interesting to note that the lowest age at which any test received full credit was 5.4 when test 2 was passed. At the other end of the scale comes test 20, which never received full credit under the mental age of 15. On the other hand, no one over mental age 5.9 ever failed to receive full credit in test 1.

RESULTS FROM THE ADULT POINT SCALE EXAMINATION.

A table comparing the adult Point Scale scores of our group with the child Point Scale scores has already been published † and shows that on the average the adult score is .51 of the child score. On the child scale we find a range of from 92 to 62 points; on the adult a range of from 54 to 20. If the scores on the two scales are compared by the method of rank differences, the coefficient of co-ordination is .81, probable error .04. There is, therefore, high correlation between the scores obtained on the two scales.

* Recent experience has shown that the present European war has had a great influence on part (f) of this test; for, up to the time of the war, this part was decidedly the hardest one in the test, but since the beginning of the war, the percentage of correct responses has increased enormously.

† Yerkes and Rossy, *op. cit.*, p. 572.

Six of our 33 cases show a somewhat wide divergence from general rules. Case 194 has an adult score which is 70 per cent of her child score; Case 189, one of 68 per cent; Case 187, one of 74 per cent; Case 188, one of 40 per cent; Case 186, one of 34 per cent, and Case 166, one of 26 per cent. The reasons for these extreme results are not clear.

The question as to which of the adult tests are the most difficult for our subjects may be answered roughly by comparing the average per cent of total score which was obtained for each test. The tests arranged in order from easiest to hardest are as follows: 2 (comparison of weights), 85 per cent; 19 (copying diamonds), 71 per cent; 20 (designs from memory), 68 per cent; 9 (absurdities), 68 per cent; 17 (ball and field), 50 per cent; 1 (description of pictures), 50 per cent; 5 (memory for sentences), 47 per cent; 4 (suggestibility), 45 per cent; 12 (relation test), 44 per cent; 10 (analogies), 42 per cent; 7 (comprehension of questions), 41 per cent; 6 (comparison of objects), 41 per cent; 3 (memory span), 41 per cent; 8 (definitions), 30 per cent; 13 (box test), 29 per cent; 11 (association of opposites), 27 per cent; 16 (code), 15 per cent; 15 (comparison of capital letters), 14 per cent; 18 (geometrical construction), 8 per cent; 14 (ingenuity), 0 per cent.

In Dr. Yerkes' revision of the adult scale, he has dropped tests 2 and 19 as being unsatisfactory, and has dropped 14 on account of a very large sex difference found. These changes are in accordance with the impressions gained in giving the examination to the feeble-minded. We also found great variations in test 1, due apparently to too great a range of interpretation of directions; some subjects try to give a description from an artistic point of view, and so fail in the end to give the number of details necessary for full credit, although their discussion of the picture may be, by ordinary standards, far superior to an enumeration of things seen in the picture.

It may be remembered that we expected to work out the significance of the separate tests as tests of intelligence. We approached the subject from several points of view, such as finding the coefficient of variability for each of the tests, finding the coefficient of correlation between scores on separate tests and total scores, etc., but our results convinced us of nothing more than the fact that the question could not be settled without the use of much more statistical work than we had time to give or than the paucity of our data would authorize us to give.

CONCLUSIONS.

1. The revised Point Scale norms give a more probable distribution of cases than do the old norms.

2 The intelligence quotient is preferable to the coefficient of intelligence both from a theoretical point of view and from the application to individual cases.

3. Point Scale and Binet mental ages agree well for the middle portion of the range of ages. Point Scale and Binet I Q's, both computed with 16 as adult age, give a coefficient of correlation of .84.

4. Tests which are easy for the feeble-minded are: comprehension of questions, definitions by use, and copying square and diamond. Tests which are hard for them are: repetition of six digits and of syllables, and giving words in three minutes.

5. The tests on the Point Scale are arranged approximately in order of difficulty.

6. The adult Point Scale (preliminary form) gives scores about one-half of those obtained by the same subject on the child Point Scale.

7. Either 12 is decidedly too low for the Point Scale mental age above which persons are not feeble-minded, or the Waverley School has a number of children who are not intellectually inferior.

8. The variation total is useful as an aid in differentiating between feeble-mindedness and deterioration.

APPENDIX A.

VARIETIES OF ANSWERS GIVEN AT DIFFERENT MENTAL AGES.

[Figures in parentheses indicate mental ages at which the different answers were given.]

TEST 1.

There were in all only 3 failures (5, 8, 9) in this test and all of these came in the comparison of the third pair of faces.

TEST 2.

No failures were made in part (a); 9 (6 to 12) occurred in part (b) alone; 13 (6 to 10) in part (c) alone; 9 (8 to 15) in part (d) alone; 3 (7 to 9) in both (b) and (c); 7 (8 to 9) in both (c) and (d); and 4 (5 to 8) in all 3 parts (b), (c), and (d). We should therefore expect part (a) to be passed if any of the test is passed, and should expect part (c) to be failed more often than either (b) or (d).

TEST 3.

No failures were made in part (a). Four subjects (5 to 9) failed in part (b); 3 (6 to 8) in part (c); and 9 (5 to 8) in both (c) and (d).

TEST 4.

This test needs no discussion since it is evident that each part is more difficult than the part preceding.

TEST 5.

- (10) No failures to count backward from 20.
- (9) 77 per cent succeed from 20; 7 per cent from 15; 8 per cent from 10; 1 per cent from 5; 7 per cent fail.
- (8) 55 per cent succeed from 20; 15 per cent from 15; 9 per cent from 10; 9 per cent from 5; 12 per cent fail.
- (7) 25 per cent succeed from 20; 0 per cent from 15; 13 per cent from 10; 0 per cent from 5; 63 per cent fail.
- (6) 0 per cent succeed from 20; 0 per cent from 15; 0 per cent from 10; 14 per cent from 5; 86 per cent fail.

There is, then, some probability of a child between the mental ages of 6 and 9 receiving partial credit in this test, but ordinarily he will receive either full credit or none.

TEST 6.

This test, like test 4, needs no discussion here.

TEST 7.

In part (a) the description "man and boy pulling wagon" was given 24 times; "moving" was given as interpretation 21 times; and expressions like "no horse," "man for horse," 58 times. In part (b) "man and lady sitting on settee" was given 28 times and the interpretations "man asleep," 38 times, "man dead," 13 times, "poor," 16 times, "no home," 13 times, "sick," 14 times. In part (c) "standing up" and "looking out the window" were practically the only descriptions given, and "in prison" the only interpretation.

Typical answers for the different mental ages are —

Part (a).

- (6) "Man and boy pulling the wagon." "Wheels are on crooked."
- (7) "Pulling team along." "Man trying to tip it over."
- (8) "Team tipping over. One old man and one boy. Two wheels off." "Man for a horse. Man pushing him."
- (9) "Man and boy pulling cart with load of furniture." "Peddlar's cart. Man sells things, boy helps him." "Moving. Making horses out of man and boy. Germans after them."
- (10) "Pretty poor. No home." "Horse has run away. Man and boy took his place. Storm. Wagon going to tip over."
- (11) "Having hard time. It would be better if they had a horse. Load apt to tip over." "In time of war. Burnt out by a shell. Took what they could with them."
- (12) "Olden times. Poor people couldn't buy horses. Had to pull own loads." "Man poor. Was out in a dump, saw old cart. Boy belongs to him. Found as much furniture as he could. Hard working man."
- (15) "Furniture? Moving day." "Shows old man and son or grandson walking up slippery hill with cart. Furniture on cart. Seem to be moving."

Part (b).

- (6) "Lady and man sitting on settee."
- (7) "Sleeping on the common." "Lady and man. Lady holding on to man's arms."
- (8) "Father and mother and settee they're sitting on." "Looks as if they were cold." "Man asleep, woman awake on settee."
- (9) "He fell asleep. She looks scared." "People look poor."
- (10) "Man looks dead. Must be his daughter." "Man looks as if he was trying to help that woman." "Snowing. He's praying."
- (11) "Old and tired. Have no home to go to." "Man is sick. Lady worrying over him."
- (12) "Haven't any home to go to, so are sleeping there." "Man blind. Woman must be deaf. Lost his hat."

Part (c).

- (6) "Standing up, looking out window."
- (7) "Man standing near post." "Standing up on couch."
- (8) "Fixing the window." "Looking out the window."
- (9) "Looking out the window for some one." "Man in prison, looking out toward the sky."
- (10) "Locked in prison for something he's done. Trying to plead to get out." "Watching to see if his wife is coming home."
- (11) "In prison trying to look out and get air. Done something wrong in his life."

TEST 8.

In cases in which partial credit was given, the following inversions in order occurred: of weights 3 and 6, 29 cases (7 to 14); of weights 6 and 9, 14 cases (7 to 13); of weights 9 and 12, 22 cases (8 to 15); and of weights 12 and 15, 24 cases (7 to 15). From this it is evident that weights 3 and 6 are differentiated with the most difficulty. According to Weber's law we should expect that 3 and 6 would be most easily arranged, and 12 and 15 with the most difficulty. If we disregard the confusion of 3 and 6, we find the other pairs arranged as would be expected. It is interesting in connection with this test to note that almost without exception subjects called weights 3 and 6 "light" and the other blocks "heavy."

TEST 9.

Part (a).

The differences between apple and banana most frequently given are: shape, 153 times (5 to 15); color, 68 times (5 to 15); kind or size of seeds, 27 times (8 to 15); method of peeling, 18 times (8 to 15); possibility of eating the skin, 18 times (8 to 14). Besides these main differences, we find differences in sweetness (8 to 15); in thickness of skin (8 to 15); in kind of stem (8 to 11); in number growing together (9 to 15); in hardness (7 to 13); in core (10 to 12); in climate where grown (11 to 15); in juiciness (10 to 15); in size (7 to 14); in weight (7); in time of year obtainable (9); in nutritive value (9); and in possibility of being made into cider (11).

Part (b).

The differences between wood and glass most frequently given are: transparency, 90 times (8 to 15); use, 59 times (5 to 15); ease with which it is broken, 55 times; and possibility of burning, 26 times (6 to 15). Other differences given less frequently are; whether it is made or grows (9 to 15); smoothness (9 to 11); method of cutting (8 to 11); shape in which it comes (9); cost (10 to 11); bark (11); color (12); whether nails can be driven into it (9); whether it is usually painted or varnished (13); and whether it becomes soft when left in water (12).

Part (c).

The differences between paper and cloth most frequently given are: use, 114 times (5 to 15); ease with which it is torn, 44 times (8 to 15); possibility of writing on it, 20 times (7 to 15); and possibility of sewing it, 10 times (8 to 12). Other differences given less frequently are: thinness (8 to 13); smoothness (8 to 11); whether it is woven or pressed (14 to 15); whether it burns easily (8 to 9); what it is made from (11); softness (12); cost (12); and whether it washes (8).

From this we see that the differences most often given are those of appearance and use. Differences in use are not given in part (a) because the use of the two is the same; similarly differences in appearance are not given in part (c).

TEST 10.

Part (a).

In cases where partial credit was given there were 156 definitions in terms of use (5 to 15) and 23 definitions (8 to 12) where a spoon was said to be lead, tin, silver, steel, brass or metal.

Part (b).

In cases where partial credit was given, there were 142 in terms of use (5 to 15); and 12 (8 to 11) where a chair was said to be wood.

Part (c).

In this part we have 99 cases (5 to 15) in terms of use, and none in terms of material.

Part (d).

In this part there were a great many statements which were classed as use, although they were often merely statements about a baby, such as "what you rock," "take care of," "plays all the time" (5 to 11). The definition "infant" was given 36 times (7 to 15). There were no definitions in terms of material.

TEST 11.

In this test there seems to be no tendency for errors to occur in the comparison of any particular pair of lines.

TEST 12.

Part (a).

There was only 1 case of no credit for the square (6). There were 44 cases of half credit (5 to 12) and 155 of full credit (5 to 15).

Part (b).

There were 22 cases of no credit for the diamond (5 to 9); 66 of half credit (6 to 15); and 112 of full credit (7 to 15).

It is evident, of course, that the diamond is much more difficult than the square.

TEST 13.

In this test there were 43 cases (5 to 15) in which less than 30 words were given; 49 cases (5 to 15) of 30 to 44 words; 48 cases (8 to 13) of 45 to 59 words; 34 cases (8 to 15) of 60 to 74 words; 22 cases (9 to 15) of 75 to 99 words; and 4 cases (8 to 15) of over 100 words.

TEST 14.

There are several kinds of error in this test. Of total failure to give anything there were 34 cases (5 to 11); of giving three separate sentences, 37 cases (7 to 15); of using only two of the words, 12 cases (6 to 10); of using only one word, 7 cases (7 to 8); and of making senseless sentences, 6 cases (8 to 10). If these failures are arranged in order of the average mental age of the subjects, we have: no sentence and only one word used (7.7); senseless sentences and only two words used (8.7); and three sentences given (9.0).

TEST 15.

Typical answers for the different mental ages are —

Part (a).

- (6) "Hurry." "Go to Boston." "Get on another."
- (7) "Telephone." "Have to stay there." "Wait for another."
- (8) "Stay and wait for another." "Walk."
- (9) "Wait and get another." "Take electric car."
- (10) "Ask when next one comes," and other correct answers.

Part (b).

- (6) "Very sorry." "Cry." "Serve them back." "Say 'thank you.'"
- (7) "Apologize." "Be nice to them." "Say I'm sorry too."
- (8) "Be kind to them." "Please excuse me." "Forgive them."
- (9) "Beg their pardon." "Say all right." "Forgive them."

Part (c).

- (6) "'Cause he's disagreeable." "He steals."
- (7) "He don't mean all he says." "Don't know any better."
- (8) "Give him another trial." "Might be telling a story."
- (9) "It's meaner than saying." "Shouldn't judge him." "Actions are more than what he says."

- (10) "Sometimes you can't always believe what he says." "What he does you can see him doing it." "Judge him by looking at him, can tell if he's telling a lie."
- (11) "Actions speak louder than words." "Cause you can tell better by what he does."
- (12) "Sometimes people say what they don't mean. Their actions show more than what they say." "Can see what they do."

Part (d).

- (6) "Because they're always disagreeable and cranky." "Tell the truth."
- (7) "Because we don't do right." "Cause they don't know what they're doing."
- (8) "Because they're rude." "I wouldn't." "Give them kind words."
- (9) "Because we're sorry." "When angry don't think of the things you do as quickly as when you're not angry."
- (10) "Feel more sorry for them." "With anger, he's not really responsible."

TEST 16.

Part (a).

The most common error was to draw the figure as a cube. The reason for this was apparently that the subjects named the figure a "box," and then afterward drew the ordinary figure of a box.

Part (b).

There was no error which appeared more often than other errors.

TEST 17.

Typical answers for different mental ages are —

Part (a).

- (6) "Hands in pockets." Repetitions of the sentence.
- (7) "Because he was drinking." "Silly." "Hands in pockets."
- (8) "Trying to show off." "Charlie Chaplin." "Anybody that goes by don't swing their cane."
- (9) "No gentleman swings his cane." "Looks funny on the street." Correct answers.
- (10) "Should have been walking sensible." Correct answers.

Part (b).

- (6) "Fell on the ground." "Broke his legs."
- (7) "He cured him." "Went too fast."
- (8) "He hadn't ought to have been riding." "If he had been more careful, he wouldn't have cut himself." "Died before he got there, maybe."

- (9) "Fell on his head. Don't often see people falling on their heads."
Correct answers.
- (10) Correct answers.

Part (c).

- (6) Repetition of sentence. No response.
- (7) "Paul." "Should say self last."
- (8) "Three different brothers; wasn't the same brothers." "Should have said I."
- (9) "If it was a girl, he had only two brothers and a girl." "Trying to make you think he had an extra brother."

Part (d).

- (6) Total failure.
- (7) Total failure.
- (8) "Funny place to inquire." "Passed the road."
- (9) "Shouldn't go to the blacksmith, should go to the station."
"Wasn't any blacksmith there."
- (10) "They don't teach you to read at the blacksmith shop." Correct answers.
- (11) "Should inquire at the post office." "Ask one of the people that's walking on the street." Correct answers.

Part (e).

- (6) Total failure.
- (7) Total failure.
- (8) Total failure.
- (9) "Why should they?" "Safer in the last car than in the first."
"If one falls, they all go." "Last car can't leave off; it's a baggage car."
- (10) "If last car is more damaged, it's better to leave it off." "Have to leave it off before it gets damaged." Correct answers.
- (11) "Any one amongst them is damaged enough." "They think the last car will slip off." Correct answers.
- (12) "Front car would be most in danger, it has to follow where the train goes." Correct answers.

TEST 18.

Part (a).

The sentence most frequently given was "I asked my teacher to correct the paper." This was given 50 times (8 to 15); "I asked the teacher to correct my paper" was given 18 times (8 to 15); "I asked my teacher to correct my paper," 17 times (8 to 15); "I asked the teacher to correct the paper," twice (9 to 12).

Part (b).

In this part the sentences "A good dog defends his master bravely" and "A good dog bravely defends his master" were given 30 times (10 to 15); "A good master bravely defends his dog," 5 times (12 to 15).

Correct sentences in which "good" modifies the second noun used, such as "A master defends his good dog bravely," and sentences in which "his" modifies the first noun, such as "His dog defends a good master bravely," were given 6 times (8 to 15).

Part (c).

In this part "We started at an early hour for the park" and "We started for the park at an early hour" were given 33 times; "We started early at the park for an hour," 3 times (10 to 12); and "We started at the park for an early hour," twice (11).

TEST 19.

Typical answers for this test are —

Part (a).

- (6) "Sitting on." "Sister." "Give anything away what you have."
- (7) "Haven't got no home." "When you go any place." "To help the people."
- (8) "Bird." "Little wagon." "Carriage." "Person ain't got no home, on charity."
- (9) "Poor people." "They have meetings." "Be good to a person." "Love to God." "State Board of Charity be 'gardeens.'"
- (10) "Kindness." "To be good." Correct answers.
- (11) "Doing some kind act." Correct answers.
- (12) "Doing good for somebody, help them." Correct answers.

Part (b).

- (6) "Priest." "Don't obey, ask."
- (7) "Do something that's right." "Don't know how to behave yourself." "To obey your teachers."
- (8) "Bad." "When you don't mind." "Some kind of a bird." "To be good."
- (9) "Rough." "Be polite." "True." Correct answers.
- (10) "Law and liberty. Be good and kind." Correct answers.

Part (c).

- (6) "Minister." "Hope." "Don't ask for anything."
- (7) "Be good." "When you can do things."
- (8) "Be bad." "Don't digest your food." "Be honest and careful what you do."
- (9) "Do what's right." "Do just what you're supposed to do." "Peace, be kind to horses and animals."
- (10) "When a man is arrested, put him in justice." "The law." "To have peace." Correct answers.
- (11) "Be kind." "Doing right." Correct answers.
- (12) "Have peace." "In court." Correct answers.

In this test, on the whole, we get at the younger mental ages a confusion of the abstract term with some similar concrete term such as "Carriage" (Chariot?) with "Charity;" "Priest" with "Obedience;" and "Digestion" with "Justice." At higher mental ages, we find definitions which show some inkling of the real meaning, such as, "Haven't any home" for "Charity;" "To be good" for "Obedience;" and "The law" for "Justice."

TEST 20.

Part (a).

Of the possible correct answers, "peel" was given 100 times (7 to 15), and "peeling," 6 times (11). Probably the reason that "peel" is more common and given at lower ages than "peeling" is that it may be used as a verb and the younger children tend to take the "to" in the analogy as the beginning of an infinitive. Among the incorrect answers we have 50 verbs (8 to 15); 6 nouns (5 to 12); 1 adjective referring to the second half of the analogy (8) "yellow;" and one answer which relates to the first part of the analogy (6), "Oyster goes in with cracker."

Part (b).

In this part "knee" was given 40 times (7 to 15); verbs, 100 times (5 to 15); nouns referring to the second part, 52 times (8 to 15); and nouns referring to the first part, 5 times (6 to 9).

Part (c).

In this part "glove(s)" was given 43 times (9 to 15); "mittens," twice (9); verbs, 94 times (5 to 15); nouns relating to the second part, 40 times (8 to 15); words relating to the first part, 9 times (5 to 10).

Part (d).

In this part "crooked line" was given 15 times (8 to 15); "crooked," 5 times (9 to 15); "crooked one," 4 times (11 to 15); "uneven line," once (12); "round one," once (12); "curve," once (14); verbs, 31 times (6 to 11); nouns relating to the second part, 7 times (9 to 12); words relating to the first part, 58 times (6 to 13).

Part (e).

In this part "absent" was given 8 times (9 to 15); "future," 7 times (9 to 12); "be absent," once (8); "past," 14 times (9 to 15). There was some confusion between "present" meaning time, and "present" meaning gift. Of words relating to time, there were 21 verbs (8 to 11) and 15 nouns (9 to 15). Of words relating to a gift, there were 16 verbs (7 to 14); 11 nouns (9 to 12). There were 32 words relating to the first part of the analogy (6 to 12).

Part (f).

In this part "peace" was given 39 times (8 to 15); "have peace," twice (9 to 10); "be in peace," once (9); and "make peace," once (11). Of words relating to the second part, there were 108 verbs, of which "fight" was given 44 times (6 to 13); "cease," 22 times (8 to 13); "stop," 15 times (8 to 15); nouns, 5 times (8 to 12); and adjectives, 8 times (9 to 15). There were 23 words given relating to the first part (5 to 11).

Throughout this test we find that in the incorrect answers verbs are given more often and at younger mental ages than other parts of speech, nouns come next and then adjectives. Part (e) gives the greatest variety of replies, probably because there is no verb which is readily associated with "present."

APPENDIX B.

TYPICAL ANSWERS TO POINT SCALE QUESTIONS AND THEIR EVALUATION.

TEST 7.

Part (a).

Full Credit (3). — “Man and boy. He’s pulling that cart, got it loaded with something, pulling hard.” “Man trying to pull it up.” “Ain’t got no horse.” “Looks as if it was going to tip over.” “Raining. Boy’s father pulling load of furniture up hill.” “Peddlar’s cart. Man sells things. Boy helps him.” “Have no horse. Must be kind of poor, in war, bringing their furniture with them. Neither look very intelligent.” “Heavy load. Men tired.” “Seem to be moving.”

Credit of 2. — “Man and boy dragging cart.” “Hay or something in team. Two men pulling it.” “Pulling team up. It’s kind of tipping over. Man and boy.” “Pulling load of furniture on wagon.”

Credit of 1. — “Man and boy, furniture, baskets, rain, post, tables,” etc.

Part (b).

Full Credit (3). — “Man sleeping, lady thinking.” “He’s sick or dying, she is taking hold of his arm.” “People look poor.” “That lady shouldn’t be there.” “Man must be dead.” “Man looks as if he was trying to help that woman.” “Man and woman side of the road. Man older than woman.” “She looks cold.” “Man making love on a settee.” “Man lost his hat.” “Man looks dead. Must be his daughter.” “Must be without a home, poor, man sick. Woman trying to tell what is the matter with him, both sad.” “Out of work, hungry, poor.” “Man sleeping.”

Credit of 2. — “Sitting down on a settee.” “Lady sitting on a settee. Man side of her.” “Lady and man. Lady holding on to man’s arms.” “In a park. Old man and woman sitting on a bench. Hat on ground.”

Credit of 1. — “Man and woman, trees and snow.” “Man and lady.”

Part (c).

Full Credit (3). — “Standing up to trees in a house where they are camping out.” “Looking out window for some one.” “Watching to see if his wife is coming home.” “Prisoned in.” “He fell asleep standing up.” “Peeking out the window.” “Standing up. Lonesome. Looking out the window.” “Standing as if saying prayers.”

Credit of 2. — “Standing up looking out window.” “Man looking in a glass.” “Climbing up a tree.” “Fixing the window.” “Man reading.”

Credit of 1. — “Telephone, chair, book.” “Man, chair, box, two tables.”

General Rules for Grading Test 7.

For simple enumeration, whether all articles are named correctly or not, give 1 point. As for example in (b), subjects will sometimes say "two men" or "two women" instead of a man and a woman.

For simple description, statements about the position of persons or objects, statements of color, or any statement concerning anything that can be *seen*, give 2 points.

For a "story" about the picture, any statement that implies any sense than sight (as, for example, statements of temperature, or sound), statements about something that has happened before or is to happen after the moment at which the picture is taken, statements concerning the feelings of persons, or of the relationship between persons, give 3 points.

Doubtful Cases. — Some statements which would surely be interpretation when given by an older person are probably mere enumeration when given by children. As, for example, "old man" and "grandfather." In such cases, do not grade until you have read answers given for other parts of this test. If the other parts give enumeration, count the doubtful case as enumeration; if they give interpretation, count the doubtful as interpretation.

TEST 9.

Part (a).

Give credit for such differences as: "apple round, banana long." "Apple red, banana yellow." "Apple sometimes red, sometimes green, banana sometimes yellow, sometimes red." "Apple harder than banana." "You peel a banana with your fingers, have to peel an apple with knife." "Banana sweeter than apple." "You can eat the skin of an apple, can't of a banana." "Skin of a banana is thicker." "Can get banana all the year, apple only part of the year." "Apple has stem, banana doesn't." "Apple has core, banana doesn't." "Banana grows in bunches, apple doesn't." "Apple is juicier than a banana." "Apple weighs more than a banana." "Apple grows in cold climate, banana in warm." "Make cider of apples, not of bananas." "Apple easier to digest."

Part (b).

Give credit for such differences as: "Glass is transparent, wood is not." "Wood burns, glass does not." "Glass breaks easier than wood." "Wood grows, glass is made." "Use wood for houses, etc., glass for windows, etc." "Wood gets soft in water, glass does not." "Glass is more expensive than wood." "Wood is brown, glass is no color (or white)." "Glass generally comes in flat sheet, wood in blocks." "Wood has bark, glass hasn't." "Wood is generally painted or varnished, glass isn't." "Can drive nails into wood, can't into glass."

Part (c).

Give credit for such differences as: "Paper tears more easily than cloth." "Cloth is woven, paper is pressed." "You can write on paper, can't on cloth." "Can sew on cloth, can't on paper." "Cloth is for clothes, paper for wrapping." "Paper is generally smoother than cloth." "Cloth is more expensive than paper." "Cloth washes, paper doesn't." "Cloth is generally thicker than paper." "Paper is made from wood or rags, cloth from threads." "When you crumple up cloth, can smooth it out again, can't paper." "Paper burns more easily than cloth." Give *no* credit for "Paper is white and cloth is white." "You can write on paper, well, you can write on cloth too."

Doubtful Cases. — "Apple is *red*. Banana is *long*." If the subject implies the opposite, give credit (this happens often with average adults). If the opposite is not implied, do not give credit. This answer of course does not show as logical a train of thought as when the differences are paired off. Count such as "You can write on paper, and you can sew on cloth" as one difference, — that of use; but count "You can write on paper, and you can't on cloth. You can sew on cloth, but not on paper," as two differences.

TEST 10.

Part (a).

Full Credit (2). — "Silverware." "Piece of silver." "Article used to eat with." "Instrument used to eat with." "Long and round at top, cylindrical, use to eat with, and measure by."

Half Credit (1). — "What you eat out of." "Stir things with." "Silver." "Tin." "You can eat from it. It is silver." "Little lead thing." "Round."

Part (b).

Full Credit (2). — "Piece of furniture." "Wood ware." "Article you sit on." "Four legs and four rounds, back and seat to sit on." "Wooden object."

Half Credit (1). — "What you sit on." "Have four legs, sit on." "Wood." "Made of wood, four legs." "Wooden chair with soft cushions." "One kind of chair is different, rocking-chair."

Part (c).

Full Credit (2). — "Animal." "Domestic animal." "Quadruped." "Beast of burden." "Four legs, tail, two eyes, mouth and nose that eats."

Half Credit (1). — "What you drive." "To ride on a team." "Four legs, ears." "What ploughs and does farm work." "To work with."

Part (d).

Full Credit (2). — "Creature, two legs, and head just like we are."
 "Human being." "Small child." "Child under three or four years."
 "Little boy or girl."

Half Credit (1). — "What you rock." "Crying." "Small and horse is bigger."
 "Infant." "To creep on floor." "To care for." "Little boy to your mother."
 "Grows up, gets big all the time." "Nurse looks after the baby." "Belongs to a mother."

General Directions for Grading Test 10.

Give full credit for classification, or for detailed description. Give half credit for definitions in terms of use or in terms of some attribute of the object as "baby cries," or for words which are practically synonymous as "infant" or for meager description.

TEST 14.

Full Credit (4). — "I went to Boston to see the pretty river and spent most of my money." "I am going to Boston to spend some money on the river." "I lost some money in the river going through Boston." "I went to Boston shopping and had enough money left to go on the Charles river canoeing." "The Boston money works is near a river."

Half Credit (2). — "I went to Boston to my Father to get some money and I saw some one fall in the river." "Boston is a money-making place and which a river passes near." "To go to Boston you have to have money and you cross the Charles river." "Boston has got a lot of money in the state and the river is out in the ocean." "I am going to Boston to get some money next week; I am going to the river today."

No Credit. — "I went to Boston one day to spend money." "I go to Boston and bring money and saw a lady fall in the river."

General Rules for Grading Test 14.

Give full credit for a single sentence containing all three words when sentence does not have verbs connected by "and." If the verbs are connected by "and" give full credit if the connection of the sense is very close. "Boston" may be used as an adjective. The sentence does not have to be true. Give half credit for two separate sentences or two which are loosely connected. If three sentences are given and the three words are used in two of these three, give half credit. A loosely connected sentence in which two of the verbs have different subjects should receive two. Give no credit when only two words are used, even if these two are used in one sentence.

TEST 15.

Part (a).

Full Credit (2). — "Look for another train. Wait at depot." "Take electric car." "Ask what time the next train went." "Take a taxi." "Telephone."

Half Credit (1). — "Go any place at all." "Have to stay there." "Wait till it comes back." "Take a watch to see how many minutes." "Go home."

No Credit. — "Run for it." "Hurry." "Go to Boston."

Part (b).

Full Credit (2). — "Forgive them." "Pardon them." "Be nice to them." "Tell them all right and not do it again." "Do to them as you'd like them to do to you." "Make up with them again."

Half Credit (1). — "Serve them back." "Go up and tell them you feel the same." "Like them." "Say welcome." "Do nothing." "Let them go." "Pay no attention to them."

No Credit. — "Thank you." "Apologize." "Be sorry to them." "Take it back."

Part (c).

Full Credit (2). — "He don't mean all he says." "Things he did more accountable than what he says. Perhaps what he'd tell you wouldn't be true." "Can tell by their actions and by the way they say it whether they mean it or not." "Might do something he said he wasn't going to." "Can see what they do."

Half Credit (1). — "You can judge people by their actions, can tell by what they do." "Actions speak louder than words." "When he acts it, it shows more gratitude." "He does more than he says."

No Credit. — "Cause he's disagreeable." "Should judge him in his ways." "See for yourself what he does, can mostly tell when a person is all right and when they're in wrong." "Supposed to do the right thing." "Shouldn't judge them at all."

Part (d).

Full Credit (2). — "Think they don't mean it, they're in such a temper." "When they did it, they didn't stop to think; when they're not in anger, they plan to do it."

Half Credit (1). — "When they mean a thing, don't forgive them."

No Credit. — "Because they apologize and think more of it." "One might be done by accident; one with anger means to do it." "Better to do things without anger."

General Rules for Grading Test 15.

Give full credit for full, logical answers; and for incomplete answers in some cases where the remainder is implied, as "Can see what they do." Give half credit for answers which show some slight grasp on the whole situation.

TEST 17.

Part (a).

Full Credit. — "Couldn't swing cane with hands in pockets." "Can't have hands in pocket and swing cane unless he had cane on his arm."

Part (b).

Full Credit. — "If he was dead, taking him to the hospital wouldn't do any good." "If he's killed, can't get well."

Part (c).

Full Credit. — "Trying to make you think he had an extra brother." "Couldn't be a brother to himself." "Only had two."

Part (d).

Full Credit. — "If they can't read the first sentence, they can't read about the blacksmith." "Who was there to tell him to inquire at the blacksmith shop? The post couldn't tell him." "If you couldn't read, how could you read it at all?"

Full Credit. — "If they left the last one off, the one next to the last would be in as much danger." "There would always be a last car."

TEST 18.

Part (a).

Full Credit. — "I asked the teacher to correct my paper." "I asked my teacher to correct the paper." "The teacher I asked to correct my paper."

Part (b).

Full Credit. — "A master defends his good dog bravely." "A dog defends his good master bravely," etc.

Part (c).

Full Credit. — "We started for the park at an early hour." "We started early for an hour at the park." "We started for the park at an hour early." "We started early at an hour for the park."

General Directions for Grading Test 18.

Give full credit for any English sentence containing all the given words and no other words.

TEST 19.

Part (a).

Full Credit. — “Take pity on people that ain’t got no homes.” “Anybody is poor and ain’t got no home, the charity helps them along.” “To give to the needy.” “When you look out for a poor person.” “Love for the poor.” “Society to take little wanderers and put them in homes.”

No Credit. — “Give anything away that you have.” “People have kind of society and help.” “To do anything for anybody for nothing.” “Love toward your neighbor.” “Helping.” “Kindness.”

Part (b).

Full Credit. — “Mind the attendant, what they say.” “To mind.” “Do what you are told.”

Part (c).

Full Credit. — “Do right by others.” “Treat everybody the same.” “To be fair and square with everybody.” “To give one person his rights.” “Not to let one do what you wouldn’t let another do.”

No Credit. — “To do as you’d be done by.” “Doing right.” “To do right.” “The law.”

THE INSANE PSYCHONEUROTIC.

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It is axiomatic that the borderline between sanity and insanity is very difficult to draw, but the distinction between insane and not insane is much complicated if there exists in the patient any mental disease — psychopathia, psychoneurosis or psychosis. The question of insanity is a legal matter — one of evidence and law. To the law one is insane or sane — the dividing line (however uncertain the medical or other definition may be) is absolute.

Among the psychoneurotics one finds not infrequently cases in which there can be very little doubt of insanity in the legal sense — cases such that, by reason of their mental state, anything approaching a normal conduct of life is impossible. Their conduct is “socially inefficient” (White), and due to a mental disorder. In many such cases there is a definite doubt between psychosis and psychoneurosis; in other words, the differential diagnosis is very difficult. Some cases which seem purely psychoneurotic run a definite course with recovery, much as do the manic-depressive cases. In many of these there is a very real danger of suicide; others have other complicating factors, some of which will be pointed out. Study of this group seems to bring out more clearly than in any other the great importance of a thorough analysis of the entire life of the individual, since it is only by this method that the sequence of events can be correctly obtained, the primary and secondary phenomena in the mental state determined, and the causes for the mental maladjustment laid bare.

Because of the practical importance of these several points, ten cases illustrating various phases of the question have been chosen at random from the records of the hospital; limiting the choice to cases in which psychoneurosis was important in the diagnosis, and the cases either ran a manic-depressive course, were insane in the legal sense, committed suicide, or the differential diagnosis was obscure. All of the cases have been thoroughly studied, and all but one presented at staff meeting, which means that a great

* Contribution from the psychopathic hospital, series of 1918.

deal of time was spent in working out the case, so the opinions recorded were not formed in haste, but were subject to considerable debate and correction by the entire staff.

Merely for convenience, the cases have been taken in the order in which they appeared at the hospital. Many more could be added to the list, but without revealing any additional information.

CASE I. — A successful business man, forty-eight years of age, salesman in the furniture business, constantly advancing in his salary until within two years; married, with two living children. No history of lues, but gonorrhea at thirty-nine. Heavily alcoholic until eight months before admission.

He first came to the out-patient department of this hospital Jan. 3, 1916, when he said that about three years previously he had a period in which he was somewhat agitated, miserable, had numbness in the head, dull headaches and dizzy spells. People moving about confused him. These had continued more or less until the time of his visit, when the symptoms were somewhat worse. Physical examination was practically negative. He continued to visit the out-patient department with some relief, but finally entered the hospital voluntarily on July 5, at which time he was depressed, emotionally unstable, and much worried over his physical condition. He showed no major psychotic symptoms; complained a great deal of nervousness, of a fear of sickness; was worried. No delusions; no hallucinations; no loss of memory. He thought that he might be dwelling too much upon his physical condition. A week later was pleasant and cheerful, not anxious, and in fairly good condition.

Physical examination was practically negative. Partial deafness of right ear. No other abnormal neurological findings. Blood pressure 128-70. Urine negative. Wassermann reaction on the serum negative. He was discharged to the out-patient department, and on Oct. 17, 1916, on the advice of the out-patient department physician, he entered a State hospital as a voluntary patient.

In the meantime his wife had complained that several times he had sharpened knives, apparently with intent to commit suicide. His wife gave a family history of both grandfathers being insane, and an uncle and sister insane. The patient knew nothing of his grandparents. Said his mother was inclined to be hypochondriacal, and thought that some of her people were insane. He had a feeble-minded sister.

At the State hospital the patient laid his trouble to the fact that another man had been showing his wife attention for about three years, that following this he began to drink, and gradually fell off. He had become jealous of his wife and an old gentleman who had been helping to care for the family.

Orientation was correct. No impairment of memory. No evident deterioration. No hallucinations. Complained of one of his ears being

blocked, and that he had more or less stomach trouble. Emotionally somewhat depressed. Physical examination negative.

He remained hypochondriacal until about a month before leaving the hospital on March 17, 1917, when he began to improve, to do some work, and to talk less about himself. He went home on March 17, and on March 22 was brought again to this hospital by the police, *because of an attempt at suicide on that day*. He was said to be very despondent, as he believed he would become a burden for his wife and children, since he thought he had had attacks of paralysis.

It appears that on the morning of the 22d, while his wife was out, patient beat himself on the head with a cold chisel. When he did so it did not hurt him any more than "if his head were a block of wood." He had linear lacerations, ten in number, which did not extend through entire thickness of scalp. There were also two parallel superficial scratches running transversely across the neck.

At the time of the admission he said that "all the mucous membrane is gone in my mouth. I can talk and think all right, but my body is dead, all except my heart, my saliva is gone, and I have pus instead." He took off his shoe and stocking to show that the foot was dead and cold, although it was warm and of a normal appearance. He was correctly oriented. Realized that he was despondent, thought he was very weak, not strong physically, had not been unconscious. Felt somewhat depressed because he thought he had gotten himself into serious trouble, at the same time laughed about it. While he felt that his body was dead he knew that it was unreasonable, and could not be true, nevertheless it seemed to be so. He could be temporarily reasoned out of his ideas, but at once would begin to feel again that they were real. No memory defect. No other abnormalities. Mental level that of a normal adult. Continued to do fairly well, and was committed to a hospital because of his attempt at suicide. Patient denied ever having been nervous before he began to drink; found that drinking affected him very much. At times felt as though he were very light in weight. Complained at times that his head did not have the proper control of his body. Explained the pus as due to some local condition in his nose. Did not sleep very well; tired very easily.

The discussion of the diagnosis brought out that the differential diagnosis between manic-depressive psychosis and psychoneurosis is rather unsatisfactorily presented. "Neurasthenic symptoms can be the first symptoms of different psychoses, chiefly of manic-depressive and dementia præcox. A neurasthenic patient shows irritability and depression, because he notices that his efficiency

decreases. As soon as he takes a rest he becomes better. The manic-depressive case has uneasiness and depression without apparent reason, which cannot be changed by cheering him up. The neurasthenic is suggestible and will believe you; the manic-depressive remains pessimistic. Changes in the neurasthenic condition happen under the influence of outside factors; in the manic-depressive without definite reason." (Abstract from Kraepelin.)

The diagnosis lay between manic-depressive psychosis and psychoneurosis; if the latter, possibly a constitutional state lighted up by alcohol.

The symptoms seemed to be those of psychoneurosis with secondary phenomena of depression, the whole making a state in which the patient was dangerous to himself and practically inefficient.

Because of his suicidal attempt, and the very real danger to himself thus indicated, he was committed. At the hospital to which he was sent, the diagnosis was left unclassified. His condition has improved and he is working, but he has not yet recovered. It is possible that the neuronie damage due to his alcoholic excesses will prevent the return to a normal level of activity.

CASE II. — A Jewish man, born in Roumania, was sent to the hospital by his physician on Feb. 8, 1916, because he had been worrying for the past year, and had become very nervous and fretful. Suffered a great deal from headaches and dull pains over his face. He was removed from the hospital the next day, so an adequate examination was not possible, but certain facts were obtained.

On Jan. 1, 1916, patient took examinations for the bar for the fourth time. He was sure he had not passed because his head felt bad, but had not received notification. He had been very nervous, there was insomnia, and a good deal of headache; for a few days he had been rather depressed. Correctly oriented. Attitude of a depressed person. Denied hallucinations and delusions. There seemed to be no impairment of the memory. The first three times he took the bar examinations he had felt that he should pass, but he did not do so; the last time he took them he was quite certain he had not passed. Following this he became more and more depressed and worried.

The physical examination was approximately negative, aside from some tonsillitis and adenitis. Wassermann reaction on blood serum was negative.

In March the patient was notified that he had passed the bar examinations. He became very active and joyful, and *suddenly became blind*.

Treated for this at a general hospital, a diagnosis of "hysterical blindness" was made, and he was cured suddenly and completely by pressing a pencil against the eyeball, assuring him that when it hurt sufficiently he would suddenly see. He then continued his overactivity; engaged in the practice of law, hired expensive offices, but in May suddenly lost his speech. Sent then to a sanitarium where he was mute, except for the repetition of some incoherent syllables, although he observed very accurately, and attempted to explain things in pantomime. At first he could not write, but after several weeks he gradually began to do so, and in July could write coherently and extensively. A philanthropic woman, who had been much interested in him, came frequently to see him. To her he one day wrote on paper that if she would permit him to address her by her first name he thought he could talk. To this she finally consented and forthwith he spoke, and talked voluminously. On July 23 he left the sanitarium, and attempted to practice law again, entering a political campaign as representative of his ward.

During the fall he got along only fairly well, but in January, 1917, he had a crop of boils. During this period he would fall into deep and long slumbers. His parents then took him to the New York hospitals; he was observed at Bellevue, transferred to Central Islip, from there to the Manhattan State Hospital, and from there to the psychopathic hospital. At the Manhattan State Hospital physical examination revealed no neurological symptoms nor hysterical stigmata. No hallucinations nor delusional ideas, no symptoms in the fields of orientation, memory, intelligence, etc. He was reserved and evasive, at times somewhat anxious, admitted a previous period of depression, loss of eyesight, and a complete loss of speech.

Readmitted to the psychopathic hospital on March 27, 1917, at which time a fairly satisfactory history was obtained. Patient had worked very hard for his education; was married at twenty, and his wife helped him through law school. His loss of speech was first noticed in April, 1916, and continued until some time in July. In January, 1917, he realized that he had "bitten off more than he could chew," as he stated.

The family history was essentially negative; otherwise the information is that which has already been given.

The patient's memory was unimpaired. He was somewhat depressed, but not markedly so. Gave a good history of his previous difficulties. His last depression came because he did not have as much business as he should. Began to fear he could not provide for his family. Became tired, slept a good deal. Went at his mother's suggestion to be examined at the New York hospitals. Made some trouble there because his mother left him. He was quiet, orderly, accessible; no evidence of hallucinations or delusions. Spoke of the bad influence of being with the insane; thought that this was hard on his mind. Was not especially egoistic; was somewhat worried, and cried easily, but later denied being depressed. Insight good; somewhat suggestible.

The diagnoses to be considered were dementia præcox and psychoneurosis. For dementia præcox there were very little, except that one sometimes got from him the impression of dementia præcox. The analysis of the facts of his entire life, however, would indicate that it was a psychoneurosis (hysteria). There had been no suicidal attempts, nor had he seemed to think of such. A diagnosis of not psychotic was made.

Patient was discharged to the out-patient department on April 5, 1917, and on April 17 *committed suicide by hanging* — evidently with a return of his depression.

Here, then, is a rather definite history of prolonged worry and overwork, with several obviously hysterical episodes. *Secondary* to the psychoneurotic manifestations came *depression*, and apparently to the return of such depression is to be ascribed the successful attempt at suicide. The case indicates clearly that where there is much depression in a psychoneurotic we should be very careful about releasing the patient from observation.

CASE III. — A young man of twenty-four, whose father was Hungarian, and his mother (who was very neurotic) English, was born in this country; is single; a Protestant; a clerk and music student. He came voluntarily to the hospital on June 15, 1916, suffering from insomnia, profound depression, and occasional thoughts of suicide. He was oriented; answered questions intelligently; had no delusions nor hallucinations and was not alcoholic. He had at times imagined that when he was playing the piano the audience commented unfavorably on his looks, character or playing, or all of these. About three months before, while writing in the office, he became unable to go on. He felt something snap in his head, he trembled, and felt numb all over. This had been preceded by much worry over social, family and business affairs.

There was no memory disturbance. Patient graduated from the Mechanic Arts High School at eighteen. He was an accomplished pianist, had had to go to work because of his father's death, and had worked as a clerk. He had found his work distasteful, and had always worried about it. He had an attack of grippe in November, 1915, following which he was nervous, lacked energy, was less alert, and found his memory not so good. He had headache and some insomnia, and distressing dreams frequently of a sexual character. He became more self-conscious, felt that he did not play so well as formerly, and this caused him to worry and become more depressed. He expressed some ideas of reference (some of which have been stated above), and in addition he thought that his boss was down on him because he was uneducated, and feared that patient might get his position. He was sure his appearance had changed, and that people had noticed him on the street because of it. He showed emotional instability, weeping rather easily.

The physical examination was negative, except for a rather low systolic blood pressure — 104. There were no abnormalities in the neuromuscular system. Urine negative. Wassermann reaction on serum negative. Spinal fluid negative.

On the Point Scale he graded at normal, with no irregularities. He continued to worry some, to be rather unstable, and was finally discharged to the out-patient department as not psychotic; psychoneurosis; (?) of dementia præcox.

On June 25, 1917, he returned voluntarily to the hospital. Imagined that he was dying, and shaking from the knees up to the chest. Thought his mother was dead. Said he had various kinds of mental diseases; that he heard people talking about him, and saying bad things about him. He was correctly oriented; there was no memory defect. School knowledge well retained. He still felt that people were criticizing him unfavorably when he was playing; that his playing was poor; and that he must look queer and excited, because he was so nervous. No delusions of persecution or grandeur. He named a great many types of mental diseases which he thought he had; thus, because of his numb feeling he was sure he had dementia præcox or general paresis. No actual delusions could be made out. He seemed depressed and fearful, wept easily. Rather restless, walking up and down a great deal. He remained in this state, rather weak and listless, complaining that his mentality was below par, that he was helpless; seemed depressed. No amount of explanation or suggestion could rid him of his ideas. His heart became weak, then he thought his organs were disconnected, that his existence was merely physical or mechanical, and he could not really be encouraged. It was necessary to commit him, and he is still in the hospital to which he was committed.

He was presented at staff meeting with the diagnosis of psychoneurosis. He had marked and variable somatic delusions, and difficulty in thinking, so that he felt at times that he had lost his mind. He explained, for the first time, that he had the fear that he had syphilis, and that this was what gave to him the fear of death; but reassurance that he did not have syphilis was not sufficient to break down the train of ideas.

The diagnosis was very easily reduced to dementia præcox, manic-depressive, and psychoneurosis. There were no definite hallucinations; there was a good deal of scattering of interests and mental processes; he was somewhat apathetic; not deteriorated; and without much impulsivity. The definite relation of the sexual ideas and disturbances and bodily sensations all seemed more likely referable to psychoneurosis. This diagnosis was compatible with the feeling of inadequacy, the absence of definite depression, and the ideas about his physical condition. On the other hand, his train of thought could not well be followed — he

had somatic and nihilistic ideas; he did not show the characteristic earmarks of psychasthenia, nor of hysteria, nor altogether of neurasthenia. The staff were about equally divided between dementia præcox, manic-depressive, and psychoneurosis; with perhaps some leaning in the direction of psychoneurosis.

An overlooked point in this case was the low blood pressure. It has been rather clearly shown in the war work that many cases of a psychoneurotic nature, with fears and tremblings, and even somatic ideas, are much relieved when their already low blood pressure is brought to a normal level by the administration of pituitrin. Such observations are not yet numerous enough, nor have the cases been followed far enough, to make out that such improvement is permanent. Nevertheless, all such cases should receive the benefit of the doubt, and have this type of treatment, in addition to hydrotherapy and psychotherapy. Thus in many cases the more important fears and tremors may cease to have their well-defined physical effect.

Because of the impossibility of caring for him outside an institution, it was necessary to commit him. At the hospital to which he was sent, he is regarded as a case of dementia præcox, and his condition remains practically unchanged.

CASE IV. — A Jewish man of twenty-seven was sent into the hospital on Feb. 22, 1917, with the statement that he had been ill for about two months, during which time he had been brooding, considered himself as wrong, and thought he was steering toward his destruction. He was eating and sleeping well, and complained of no pains nor headache.

The family history was negative. Patient was born in Russia; came to the United States in 1908, where he worked as a cutter, and graduated from a night high school. He was naturally quiet, efficient and well liked; had been secretary and treasurer of his union. He began playing the curb market and lost several hundred dollars in a stock transaction. He began to worry about this — made a few small mistakes and thought his reputation was ruined. On a doctor's advice he took a trip to New York, and there spent about three weeks in a sanitarium. Returning to Boston he took up his old work and did very well, although he would go home at night and tell his brother that he had made many mistakes, and that he must get away from Boston. About a week previous to entrance he attended a banquet and dance, enjoying himself very much. When he got home he began to tell his brother that he had been a fool to worry so much.

Mentally he was rather depressed at the time of admission; he had threatened suicide; but his depression cleared in about twenty-four hours, when he was quiet and agreeable and told his story readily. There

was no memory disturbance, he realized that he had been depressed, and that there was no cause for this depression, except a few small mistakes that he made. He talked a great deal about his trouble; his conduct was good; he was interested in his surroundings, and very sociable in his personal contacts. There were no hallucinations and no delusions revealed. Within a few days he realized that his trouble was that he took things too seriously. He was recognized as a very introspective type, and the mysteriousness of his ideas was apparent. He thought that people might have talked about him, but had never heard them.

The physical examination was completely negative. Blood pressure, 120-80. Urine negative. Spinal fluid negative. Wassermann reaction on the blood serum negative.

He was discharged from the hospital on March 2, 1917, as a case of psychoneurosis, condition improved. On March 11 he was returned in a depressed condition, had been blaming himself, thought he had made a fool of himself, that he had lost his reputation, and was doomed to downfall. He had been better for two days at home, then got worse, and although his work had been satisfactory he was so convinced that it was bad that he wanted to leave and go to Chicago. He said that his family did not think as much of him as they had. Thought he could not get along well because he had been here. People had been talking about him, but he had not heard them. He was indefinite in his statements; it was difficult to get him to talk directly. Thought his reasoning capacity had not been normal, and his mind was not working correctly. No ideas of persecution of any sort. At times he talked irrelevantly, and always argued in a circle. Sometimes he thought he would be better out of the way, but had not considered this seriously. He was not so good a man as he had been in the past. Was sure that people had talked about him because he did not act naturally, or as a normal person should. *Did not feel sad and depressed.* Thought his judgment was about 75 per cent normal. Related it all to his unsuccessful stock transactions.

He was very introspective; did not seem to be depressed; it was difficult to grasp his train of thought. Seemed to take less interest in his surroundings than before. He was superficially self-accusatory.

The staff meeting opinions were rather divided. Some thought he was a case of psychoneurosis, some of manic-depressive, most felt that he was not dementia præcox, although one or two thought it was an early præcox that would be of slow development.

Because of the uncertainty whether this might be the early state of a præcox, because of the danger to his own life in his depressed phases, and because of the fact that he was unable correctly to order his life, all resulting from his mental disturbance, the patient was committed. By August 1 he had been

discharged from the hospital to which he was committed with a diagnosis of manic-depressive (depressed), and condition on discharge as recovered.

Here then was a mild depression, with self-accusatory ideas; ideas of inefficiency and inadequacy, — symptoms rather of the psychoneurotic than of the psychotic type, and all definitely related to a certain misstep in the conduct of his life, — in other words, what we sometimes call a psychogenetic depression; the course of the disorder that of manic-depressive, with recovery in a few months.

CASE V. — A Jewish woman of forty-eight was sent to the hospital on May 2, 1917, because she was depressed, worried and had somatic ideas. It was not possible to obtain a very good outside history because of language and temperamental difficulties; but according to the history the patient had always been well until the previous winter, when she began to show a certain amount of irritability. About six weeks before admission patient and her family moved to another house. Following this she was crying all the time. Claimed that she did not like the rooms, that the house was dirty and her children were dirty, which was not true. Would sit in a chair most of the day, and shake her head constantly. Claimed she was going to die. Had never previously shown tendencies to worry. She claimed that she could not eat. No disturbance of sleep, but constantly agitated through the day. Had been losing weight. She was correctly oriented. There was no memory disturbance. Offered no complaints regarding her married life.

Claimed that her life was always full of trouble, but her trouble seemed to date to the marriage of her son, about five years ago. He married a Christian girl, and she seemed to think that this was the cause of her sickness. At the same time she admitted that, on the whole, her life was not unhappy. She denied any past illnesses; admitted always a tendency to worry.

She related her present illness directly to moving to the new house. This house was damp, she lost her appetite, had trouble with her nose and ear. Did not feel sick, but she worried. Claimed that her children were dirty because she was weak and could not care for them. She complained about everything in the hospital; for instance, did not like the food but would eat. No hallucinations; no delusions. Her attitude was that of a very neurotic person; she was not depressed; lively in speech and emotions; very talkative, talking chiefly about leaving the hospital.

The physical examination was not remarkable. There was some deafness of the right ear. Irregularity of the pupils, which reacted promptly. Blood pressure, 138-105; slight disturbances in co-ordination. The urine was negative; the spinal fluid was negative. Wassermann on the blood serum negative.

The diagnosis of psychoneurosis was made; patient was discharged on May 11, and visited the out-patient department following that. For a time she continued to complain somewhat; but in June her son entered the hospital, — apparently a frank case of dementia præcox. The patient began to worry about her son, but all of her personal complaints had disappeared. In the meantime she had gained about fifteen pounds in weight, and was feeling perfectly well.

In other words, although the symptoms were psychoneurotic at all times, occurring in a very neurotic woman, the disturbance ran a manic-depressive course. At the present time, a year later, she continues well.

CASE VI. — A woman of fifty-five, of American descent, was sent to the hospital by her physician on March 31, 1917, with the statement that she was violent, excited, homicidal, at times depressed, "feels that she must kill her twin sister." "Breaks down and weeps about it."

Family history was essentially negative for the ascendants. One paternal uncle inclined to mild depression, but never suicidal. The mother had a "nervous trouble" at about sixty, with no mental symptoms. The twin sister has enjoyed good health, never had nervous or mental trouble; less excitable than the patient, otherwise temperament similar. Patient was very devoted to her twin sister, and both were very demonstrative. A younger sister had been in ill health for twenty years. She had a middle ear abscess, and became ill with nervous prostration ("neurologist's diagnosis"); said to have some spinal trouble, has never had mental symptoms; not self-centered, not peculiar.

Patient was an average scholar; of good habits. Had not been much subject to depression until the death of a sister four years ago. Always somewhat apprehensive. Neither patient nor twin were self-reliant, both depended a good deal on an older sister. Patient has not been thought self-centered, had a good sense of humor. She has been the housekeeper of the family, the other sisters working. There has always been some anxiety about money matters; never any disappointment in love. Always very devoted to her twin, as was the twin to her. At the age of thirteen, for three months, patient was ill in bed, complained of severe vertical headache, was depressed, and at times imagined she was dying. In 1893, at the age of thirty-two, she developed the idea that she must kill her twin sister. Said the feeling started in her chest; she felt hateful toward her sister, and must kill her. She always found relief by going out of doors. At the same time she was as devoted and affectionate towards her sister as ever. Never made attempts nor threats, only complained of the feeling that she must kill her. At the same time there was a pain in her head. Recovered after three or four months. Morbidly depressed after the death of her father and mother, eighteen and twenty years since. In 1913

her sister died and patient was very depressed. All she could think of was that her deceased sister was "jammed up in hell," and that she was struggling to get out of her casket. Realized this was morbid imagination. *There was no feeling that she must kill the sister.* This continued about six months. She then went away from home for a two days' visit, and returned fully recovered.

In the fall of 1916 there was some financial worry, and the patient was quite apprehensive. In January developed the idea that she must kill her twin. At times felt as if the twin "might be jammed up in hell." Very talkative, especially about the obsession. Said she talked to keep it off her mind. In February, when on a visit, became ill with grippe. In March, went to a sanitarium where she stayed a week. Had a bad spell one night, was quite excited and noisy. Her idea persisted. Once when she repeated that she must kill her twin, the sister said, "Go on, do it now, and we will have it over with;" the patient then threw her arms about her sister and said, "I wouldn't do it for the world." Complained of a distress in the top of her head like some one driving nails in. Sometimes wished she could die, never suggested suicide. Rather dreamy and absent-minded. Inordinate appetite. Insomnia; beautiful dreams. She was depressed; every second day the disturbing ideas were more insistent, and were followed by considerable exhaustion. No history of ideas of reference, of persecution, nor of hallucinations. No memory loss.

Here, the patient recognized her own condition very well. Complained of great pain and pressure on the top of her head; at times saw strange and terrible faces looking at her. Had never heard voices. Was well oriented. Her memory was unimpaired. Grasp on surroundings good. There was some question from her description whether she first became depressed and then developed the idea that she must kill her sister, or whether the obsession came first and the depression was a response thereto. Realized that this was a compulsive idea, and insisted that she did not want to kill her sister. She cried a great deal about it, and was very depressed over it. In the intervals when the idea was not so impellent her emotional tone was normal.

Physically she was well-developed and nourished. Pupils irregular, but reacted well. Arteries moderately sclerosed. Heart somewhat enlarged, with a blowing systolic murmur at the base. Blood pressure, 210-120. Tendon reflexes hyperactive. A slight tremor. Physical examination otherwise negative. Urine negative. Spinal fluid and Wassermann reaction on blood serum negative.

In about ten days she was pleasant, cheerful. The idea had disappeared, she felt normal, was willing to stay until we thought she might go. On the 19th of April she was discharged to her home, and the out-patient department.

It will be noticed in the history that all of the depressions really represent over-reactions to some reason for a depression. Apparently after the depression had started came the compulsive

or obsessive idea, namely, that she must kill her sister. Such periods were usually of relatively short duration, but this does not necessarily argue against manic-depressive psychosis. On the other hand, the fact that she realized the absurdity of the idea and its character, and that she never attempted to act upon it is an indication, at least to me, that she was not psychotic in the usual sense. The patient stated clearly, just before discharge, that, "I get depressed, and then I don't take interest in my work, and I suppose those thoughts come into my mind." It will be noticed that most of her depressions have been associated with the death of some relative or some friend. Her last depression was due to the death of a life-long friend of the family, and she explained the idea of killing her sister by saying that she thought of her own death and that she should not want to die unless her sister went too, as she loves her so much. At times this idea forms itself thus: "I want to die, death would be a relief, but I want my sister to go with me." She also tells of a depression when she did not think of killing her sister. She describes herself as a person who has blue periods and happy periods; in other words, a cyclothymic disposition.

At this admission the diagnosis seemed to be an atypical type of manic-depressive psychosis.

On October 1 the patient returned voluntarily to the hospital because she was depressed and obsessed with the idea *that she must kill both of her sisters, and must commit suicide herself*. An uncle had died two weeks previous to admission, and she had promptly become depressed, with recrudescence of the ideas. She was emotionally somewhat unstable, crying easily; was, on the whole, depressed. Was freely accessible; her depression was more subjective than objective, although she was somewhat retarded in her activity. Memory remained good. The additional idea was that she felt that she was going to die and must kill both of her sisters instead of one. This time the depression seemed in part, and the worriment entirely, due to this obsessive idea. She knew that she would not do it, and "it drives me nearly crazy with grief," to think that she should think such things. Felt that she was not worthy to live, and was surely going to die soon.

Within a few days she cleared up, was smiling and cheerful. The ideas had disappeared, and she was happily planning to go home. Discharged at the end of nine days in very good condition.

Physical examination unchanged. Blood pressure, 215-115.

This case may be summarized as one in which there are attacks of semi-depression, related usually to a cause, although the reaction is excessive. In the attacks of depression the patient

feels that she herself is about to die, and because of her great love for her twin sister feels that she must kill her, so they will not be separated. Along with the ideas and the depression there occur certain pains, chiefly referable to the head. There have never been any attacks of a frankly hysterical nature. The attacks are of short duration, and there never appear to be the obvious signs of a manic-depressive psychosis. Accordingly, this may be regarded either as a psychasthenia with obsessive ideas and depression, or as a mild manic-depressive condition. The association here of a very high blood pressure, arguing a certain grade of arteriosclerosis, is very interesting. It has been shown that in manic-depressives arteriosclerosis tends to come early. In this case there is no evidence of any especial cause for the sclerosis, unless it be the manic-depressive attacks.

CASE VII. — A man of forty-two, of American descent, was sent to the hospital for thirty days' observation on May 12, 1917, because of "restlessness, periodical attacks of excitement; sullen, irritable. Hallucinations, fear."

The paternal grandmother died of cerebral hemorrhage, as did many of her family. A brother of the maternal grandmother died in a hospital for the insane, as did a paternal second cousin. The father, a quick-tempered, nervous, apprehensive man, is ill with arteriosclerosis at sixty-nine. The mother, age 70, has been in ill health for five years with arteriosclerosis. One sister is nervous; stammers; had a "nervous breakdown," in which she "cried easily," at eighteen. The other sister is in good health.

The patient is the oldest of the siblings, born in 1875. He always stammered. As a youth was even-tempered, obedient, very sensitive, with very narrow interests. Although he attended school until he was fourteen, he never got beyond the primary grades (attributed to his stammering). Has never worked steadily or successfully. Used very little alcohol, never to excess; tobacco in moderation.

He attended public and private schools, then learned several trades, but has always had a great deal of assistance from his father.

At twenty he was married, and lived with his wife for eight or nine years. Separation was probably due to his failure to support her. Married again about a year since, after his first wife's death. During the intervening period had probably lived with his second wife.

Scarlet fever at five, followed by otitis and inability to walk for a time. Frequent attacks of tonsillitis. Eczema of head and chest persistent for a number of years. Vision always defective. Improvement in stammering during the last few years. A few years since a venereal disease.

At seventeen had a severe attack of grippe. For about a year not very well. Then a second attack. Soon after recovery he came to the house with a bullet wound in the arm, later admitting that he shot himself

At about this time he had two periods in which he became very much frightened, saying he was being chased, and once fainted. For many years had been very cautious of his health. Always slept on the side he was advised was the proper side to lie on.

For about a year before admission he had seemed very peculiar to his sister. Had not worked, had wanted to be alone. Would not go out in the daytime, saying the light hurt his eyes. Complained much of vertical headache.

In 1916 thought he had a sunstroke. Since then had complained of much pain in the head and of visual failure. Would not see any one. Feared that people were looking at him. Felt as though there was a hole in his head where the "air blows in." No vomiting. Would throw himself on the floor and "act almost as if he had a fit."

Since August, 1916, patient had been treated by many doctors, all of whom stated that the trouble was mental rather than physical. They feared he might lose his memory. He imagined people were trying to get into the house. Would have fits of temper in which he would smash things. The doorbells in the house annoyed him, so he quietly disconnected them. His eyes were in very bad condition, so glasses were procured for him. Before that he would not ride in the street car because he was so nervous. Felt that his head was moving up and down.

The patient had a reputation as an unusually strong man. It is said that in the past he lifted and carried pianos alone.

At the time of his first entrance he had lost about thirty pounds in weight. Physically, he showed a rash on the chest; profuse perspiration of the feet; slight tremor of the tongue; heart showed a blowing systolic murmur at apex, left base, and along vessels of the neck; brachial arteries visible, not nodular nor tortuous; blood pressure, 102-118; slight impairment of gait and co-ordination; a speech defect; a marked exaggeration of the knee jerks; no abnormal reflexes; no impairment of sensation; urine negative; Wassermann reaction, serum and spinal fluid negative; other tests on spinal fluid negative. Eye-grounds: discs rather pale, left one shows irregularity of borders, but not distinctly abnormal. Non-protein blood nitrogen 42 millimeters per 100 cubic centimeters; phenolphthalein excretion 100 per cent in two hours; X-ray of head negative.

He was correctly oriented; memory fairly good,—giving essentially the same story of his past as has already been given,—could not give the exact date of his last marriage. Patient dated his present illness back about two years, during which time his eyes had bothered him. Some months ago the difficulty became very marked, his vision was so blurred that he could not see around the shop, and he became very much frightened by this. After he got his glasses he would only go out in the night, in order to get used to them, as he could not see well in the daytime. He had been to the Massachusetts General, City and Homeopathic hospitals for eyes and headache, and also for some urethral discharge. In addition he has had a buzzing in his ear. His nervousness showed itself by trembling,

he said. He complained a great deal of loss of strength, of easy fatigue. Denied headaches; had not had any vomiting attacks. Never had any fainting spells. He showed no delusion formation. He could not explain why he was losing his strength. He denied hallucinations to all forms of questioning. He had periods in which he was very anxious, was very shaky, trembling all over, and emotionally very unstable. Such spells did not last very long. At such times he had the fear of impending death. He showed no retardation; his associations were narrow, centering chiefly around himself; he co-operated very well. No conduct disorder. His attention was well held so long as the topic was himself. Expected a great deal to be done for him, was not capable of making much personal effort.

On the Point Scale he rated 11.6 years. He showed difficulty in grasping new situations. Did not concentrate his attention, so that his reproduction was poor. In the mechanical puzzles he was very clever.

The symptoms that this patient showed of agitation and apprehensiveness connected with the fear of death, a great deal of worry over trifling physical ailments, many of which could not be revealed, are all essentially psychoneurotic. Despite the history which seemed to point in the direction of delusion formation and hallucinations no clear evidence of this could be obtained from the patient. He had always been an inadequate person, neurotic from the beginning, who apparently did not get along very well in practical affairs. The combination of symptoms, which are essentially psychoneurotic, with a certain amount of depression, together with his distinctly abnormal conduct, indicate that the process is more severe than is usually the case in a simple psychoneurosis. The continually high blood pressure of 160, with the diastolic ranging around 110; the emotional instability; the loss of weight; the confusion in recent memory, which is evident at times, all would seem to indicate the possibility of capillary fibrosis as the main factor in the case at the time of our study.

He was discharged from the hospital on June 12, going to live with his sister. There for a few days he got along very well, was willing to meet people, and showed interest in things generally. For about one month before his second admission, on August 4, his behavior was quite abnormal. He would go to the cellar and stay several hours. During the extreme hot weather he went to the attic and stayed for hours. On the very hot days he wanted a bottle of hot water on his head. Said his head was cold; thought an artery had died in his head. At times he thought his leg dragged, could not get it to go. Would enjoy working if there were doctors around. Wanted to return to the hospital. Complained of

numbness in arms and legs. Would sit for long periods with his head in his hands, weeping.

In the latter part of July he told his sister that he was so discouraged he thought he would turn on the gas in the cellar, and end his life. He would not go out in the daytime; would not occupy a seat in the street car with his sister. At times thought he was dying, and wanted the ambulance, or the doctor, called. Would lie on a couch with his head hanging off, crying and moaning. Lost his way when on the street, and a police officer had to take him home. Had complained of diplopia. Came to visit the outpatient department, and remained in the hospital voluntarily (August 4).

The physical examination was unchanged. Patient complained of headaches, weakness and nervousness.

He was correctly oriented, without particular difficulty in recent memory. Complained of his stomach — a feeling of discomfort which passed away when he lay down. Thought that keeping still would cure him without any medicine. Was more contented because he could read for hours with no headaches. Stated that he had first begun to worry about his eyesight, and now has various troubles. Explained away his bullet wound (of years before) by saying the revolver exploded accidentally. Also had explanations for the two periods when he was frightened many years ago. Complained of a *radiator* in the top of his head causing the feeling of discomfort. He was depressed; somewhat retarded. Emotional tone unstable. Talked at great length about his physical and mental condition. At this time his intelligence rating was 13.5 years on the Point Scale. Memory tests only fairly well done.

He continued with periods of anxiety and depression, often complaining of a terrible squeezing pain in his head. On September 22 he was feeling very well and was helping some about the ward. On the night of September 23 the patient called the nurse at 11.45. He had been quiet about fifteen minutes previously. When the nurse went to him it was found that he had severed the superficial veins in both forearms with the top of a tobacco tin, and was in a serious condition from hemorrhage. Although he claimed he was not attempting suicide, he had written various notes saying good-by, not to blame the hospital, etc., indicating his intention of ending his life.

Following this he spoke of a considerable feeling of relief, the pressure in his head was not so bad, he suffered much less from headaches, but, of course, was weak for some time, due to the hemorrhage. However, it was not long before he was feeling weak and sick, had pains in the legs and in the back, and so on. On the 2d of November, while quietly talking, he suddenly grabbed at his face and clawed it, scratching himself rather severely. He gave as his reason the fact that he was feeling depressed.

Transferred on Nov. 5, 1917, at which time there had been considerable loss of weight, and a continuation of the periods of agitation and depression.

The case may be summarized as follows: a man of forty-two, in whose family history are to be found cases of cerebral hemorrhage and of psychoses; whose sexual habits and habits of work have been irregular; always regarded as a worrying, inadequate, neurotic and queer individual; a congenital stammerer. He has had many actual illnesses, and of late a severe eye trouble. At the age of eighteen there was a probable attempt at suicide. For the past two years he has not worked. During this time he has had many headaches. He has preferred to stay in the house; has lost his way when he went out. Has markedly exaggerated his symptoms; has been agitated and depressed. There were no periods of dizziness. There have not been markedly present the cardinal signs of manic-depressive psychosis; no cardinal signs of dementia præcox; no evidence of syphilis or epilepsy; with no bodily disease capable of causing a psychosis of this type; but with a blood pressure of 160-100. The intelligence rating seems to have been interfered with by his emotional state. Nevertheless, he seems to have been a constitutionally inferior person, with a very definite upset, in which a certain amount of deterioration has occurred. There were probable periods of confusion, definite periods of agitation, and some memory difficulty; a very definite attempt at suicide; with some somatic delusions uncommon in a psychoneurosis. The association of probable capillary fibrosis, hypertension, possible involutional factors, and questionable deterioration, all indicate a bad prognosis.

The favored diagnoses were psychoneurosis, and, later, manic-depressive psychosis with arteriosclerosis.

Following his transfer, there was some improvement, but lately (March, 1918) he has become more dull and apathetic and is reported to have auditory hallucinations. There has been some further deterioration, and he is regarded at the other hospital as a case of dementia præcox, although the grounds are not entirely clear. It seems much more probable that he has an organic brain disease of some type.

CASE VIII. — An English elevator operator of forty-six, came voluntarily to the hospital on May 14, 1917, complaining of depression, a feeling that he had lost his will, and anxiety. He had lost his position about six months previously, and had since become depressed; had tried to work, but could not; could not sleep; had thought of suicide, and twice turned on the gas, but was interrupted each time. He felt bad, cried easily; did not seem to be retarded, but to be very anxious; thought his mind was upset. He had made a trip to England, which did not

relieve him. Had had a previous attack eleven years before, when he was for four days unconscious, he stated.

His mother-in-law stated that his father died in a hospital for the insane, and that a nephew had been fifteen or more years in a hospital for the insane. Patient was born in England; of limited education; of normal habits, so far as known. He had very little sexual desire, and none for ten years. She regarded him as always a "regular sissy." Never cheerful, no sense of humor, very unsocial, of very narrow interests, always a steady worker. He had worked in one place for twelve years, during which time he had two illnesses, and his salary was paid. Directly after his last illness he went to the senior member of the firm and got his pay raised a dollar a week. A week later he was discharged (it was not until some time later that the real cause for this discharge was discovered: namely, that the patient had been found pilfering various small articles, and had been discharged on this account). Following this he had worked around in a number of places, but none of them were satisfactory.

Patient was married in 1904 and did not know that his wife was epileptic until the night after his marriage. Patient had never gotten along very well with his wife, had never been extremely interested in her. Wife seemed to think that her convulsions were intensified when he was around — and they had not been living together for about six months. Patient was always very affectionate toward his child, never toward his wife.

A week after his marriage, he attempted suicide with illuminating gas. He had lost his position, and was without employment. He wished to postpone his marriage until he got a position, but his mother-in-law urged him not to postpone it, and promised to give him \$500, which he did not receive; then he learned that his wife was an epileptic when he saw her in a seizure the first night after marriage. He did not threaten suicide, but attempted it. Was taken to the City Hospital, and was unconscious for several days. Following this there were no attacks of depression, until the one in which he came to the hospital.

He was operated on in September, 1916, for double hernia, and made a good recovery. Shortly after this was discharged from his position. He then became very nervous and depressed. He decided to return to England, where he would work and earn money and send for his wife and child in April, 1917. He returned to America in five weeks — said the war scared him to death, that he lived most of the time in a cellar through fear of Zeppelins. His sister gave him the money for his return trip. His wife was working in Philadelphia; he was eager to have her return, and finally in April she was persuaded to do so.

On Tuesday they began housekeeping; that night the patient walked the floor the whole night, and in the morning he was unable to work. He vomited and spat blood. On Friday this experience was repeated; the wife then refused to live with him and left.

Through all of this so-called depression, the patient had continued to try to work and had managed to support himself. He had spells when he felt nervous, and in such a spell he started for the hospital where he was operated on, and by mistake came to this one, where he was accepted as a voluntary patient.

The patient's story agreed practically with the story of the mother-in-law. He explained his attempt at suicide twelve years before by his depression and nervousness at that time; due, he stated, to the loss of a position which had just suited him. His last spell of depression and nervousness he related directly to his discharge from his position, which he liked very much. No place that he could get suited him, — in some the work was too hard, in others the pay was not enough. He worried constantly because he wanted his job back. He was oriented; memory good; no delusions nor hallucinations; considerable emotional instability; his thoughts were centered on his difficulties, and especially on the fact that he lost his very good job. He felt that if he got it back he would be perfectly all right. Reacted very markedly to any slight pain. Demanded a good deal of attention and treatment. His conduct was good.

Physically, he was fairly well developed and nourished. Teeth false. Heart negative. Lungs negative. Neurological examination negative. Blood pressure, 115-80. Urine negative. Spinal fluid negative. Wassermann reaction on the serum negative.

Rather against advice he was discharged to the out-patient department with the diagnosis between manic-depressive psychosis and psychoneurosis, in a condition somewhat improved. He was seen in the out-patient department, where he still had melancholic spells, was not able to sleep well, had many depressing thoughts, and thought a great deal of suicide. He worried about his job, about his wife and child. He worried because he did not hear from them, and did not see the child. Felt that he did not have the courage to kill himself. He was working for \$12 a week, and said he was too weak to try for other work. His effeminacy, his timidity, his self-consciousness were still present.

On June 19 he re-entered the hospital. This time he was worried over the family, could not sleep well, and he was very much depressed. He was rather anxious. No disturbance in the field of consciousness or memory. Possibly somewhat retarded, with a considerable number of hypochondriacal ideas; without definite delusion formation; without very good insight. Considerable emotional instability, weeping at very slight causes. His mental level was found to be 11.3 years on the Point Scale, with a very irregular examination, indicating that his mental state interfered with the correct rating of his intelligence. He began feeling better, did not seem so depressed, was very anxious to be noticed and talked to. It appeared that he had taken a job which relieved him from his former troubles, but did not stay very long because the place was not satisfactory in the end, and then all the troubles came back.

At this time he was presented at staff meeting, and from his general make-up and the evidence at hand, it was felt we were dealing with an inadequate personality of the psychoneurotic type, manifesting itself, particularly in the periods of strain, by depression, anxiety, emotional instability and attempts at suicide. Accordingly, he was discharged on June 29, then in a somewhat improved condition. A job was found for him by the social service department, who took a great interest in him.

On July 12, 1917, he was returned to the hospital because his depression continued; he often thought of suicide; was weak and unable to keep his job. Mentally, he showed great indecision, was very dependent on other people, tried to excite sympathy by his stories, stated that he did not keep his places because he had not found one that was satisfactory. Had no sense of shame at his dependence, never showed initiative or particular interest in his surroundings, did not plan for the future, was chiefly occupied with his own past affairs. He realized that he was quite helpless and lacked backbone. Seemed to be fairly well contented with the rest treatment. He began to be quite pleasant, was rather anxious to get out. On August 11, he was discharged, on the whole improved, to his family. Diagnosis, manic-depressive psychosis.

In this case both of the rather serious depressions came at periods when there was a definite cause for depression. It seems clear, from the entire conduct of his life and from the low-paid position with which he was satisfied, that he had a personality lacking in initiative, energy, ambition and the ability to withstand the stress and strain of attempting to attain success, in other words, that we have to do with an inadequate personality. Accordingly, the two attacks, of which we have record, appear to represent the reaction of his personality to the situation, rather than new causeless reactions of the type of psychosis. In other words, it would appear that we have to do with a psychogenetic state of anxiety and depression, which surely would not have arisen in a person of better make-up. It is probably stretching the use of the term psychoneurosis to put such a case in the psychoneurotic group. It is equally stretching the term manic-depressive psychosis to put such a case into that group. This is really a reaction state, arising in a person of inferior make-up, but one of a type which is often called psychoneurosis or manic-depressive psychosis. Certainly because of the disorder in the conduct of his life, which is directly related to the disturbance

in his mental state, the man would be committable as a psychotic patient. For his condition, as presented in his admissions here, the prognosis is good, but, of course, the personality will always be defective.

He is, at present, getting along fairly well in a job which he has secured. He says that all of a sudden he became all right, and never felt better in his life than he does now, — and this was directly related to his securing a satisfactory job, — *i.e.*, the reactive nature of the attack is proven.

CASE IX. — A Greek, man, aged thirty-four, was sent to the hospital on May 21, 1917, complaining of vague, indefinable pains, and a feeling that he was losing his mind, together with worry concerning impotence.

He was perfectly oriented for time, place and person, without evidence of memory defect for either recent or remote events, and without evidence of deterioration. There were no hallucinations; he had a fixed idea that he suffered from some very unusual nervous disease, which caused a lot of vague ill-defined pains. Concerning this he was rather depressed, but did not seem to be apprehensive. He indulged considerably in sensuous day-dreams, which amounted really to psychic masturbation. He complained also of eroticism when women passed him on the street, or if he went in bathing when there were young boys about. He dated his present illness to a day, about one year ago, when he went up in an elevator in an office building. He had a peculiar sensation in the abdominal region, which extended upward with a creeping, tickling sensation. About two months later he began to have dizzy feelings, and burning sensations in the stomach. These lasted only a short time.

During the past six months a great sense of fear when alone, so that if he went for a walk he would become fearful, and return home immediately. He had terrifying dreams when he put up a struggle for his life, but could not remember them clearly.

Emotionally, somewhat unstable; apt to break down and cry. He was quiet, and there was no history of impulsive or compulsive acts. No retardation or blocking. Conversation confined largely to his hypochondriacal ideas.

Physically, he was well developed and nourished. Neuromuscular findings normal. General physical examination negative. Blood pressure, 110-70. Urine negative. Wassermann reaction on the blood serum negative. Spinal fluid negative. He was discharged on May 30, sent to the out-patient department of a general hospital for prostatic examination, to determine whether some of his difficulty might arise from enlarged prostate. This, however, seemed not to be the case.

On July 23, he returned to the hospital voluntarily, at which time he was much depressed. He had been feeling weak, he had pain in his head

and back, said he had lost his strength and courage, and cried easily. At this time he dated his difficulties much further back than at his first admission.

He had had the creepy feelings for about ten years. He had been told in Chicago, when he first came to this country, twelve years ago, that he had syphilis, and this has bothered him ever since. Had very rarely had intercourse with women because of the fear of gonorrhea or syphilis.

About three years ago he became much more erotic, and became disturbed by numerous erections in the course of the day; later on developed pains.

During the first six years of his illness he was able to work fairly well, but during the past four years he has been worried, rather anxious, easily tired, and his work has not been so efficient. It seems to have followed the pain in the head, starting about four years ago. No history of a cyclothymic constitution. No hallucinations and no apparent deterioration.

At this admission he was very much more depressed, anxious and apprehensive. He did not show any great fear, did not react emotionally in a fearful way.

He was able to work for only a short time after leaving the hospital the first time, and his sexual symptoms of psychic masturbation, sensuous dreams, and longing for the society of women, restrained by his fear, have continued, and were rather worse. He thought his reputation was gone; that people thought he was crazy. In the course of telling this he broke down and cried.

It appeared that he had some formed delusions, which were rather difficult to get at because of language trouble, but he thought "there was something rotten in his stomach, that perhaps he had no stomach, that his intestines were gone." He thought his brain might be gone; he was surprised that he could talk; had been thinking so for some months. This, however, was not certainly made out, and it seemed that he thought his organs were there, but that he was sick. He was having some trouble that would make him crazy.

In his first admission every one agreed in making a diagnosis of psychoneurosis, but with the second admission, and the probability of somatic delusions, it began to appear that it might represent a dementia præcox process, which had had a long incubation period during which the symptoms were those of a psychoneurosis. On the other hand, others felt that it was manic-depressive psychosis, that with the marked exacerbation of symptoms in the year that had passed, we had to do with a disorder of the cyclothymic type, which would run its course and clear up. It seemed quite clear that he had been psychoneurotic for a long

time. It was not quite clear that he had somatopsychic delusions. In combination with his depression and anxiety it seemed that his condition for the last few months was more nearly that of an anxious depression than anything else.

He was committed to another institution, where he still remains.

Clearly the ideas which the patient has are the type of ideas from which many a psychoneurotic suffers. Combined with this is a well-defined psychosexual disturbance, with a very real emotional conflict between desire and fear, which has resulted in the adoption of a middle ground of psychic masturbation, and this particular method of repression appears to be the main causal influence in the present state. To be sure, one could not be positive that this is not a slowly developing dementia præcox, but certainly this is not dementia præcox in the general and more correct usage of that term; unless, indeed, we are to class all cases as dementia præcox, which would be a travesty on diagnosis.

Clearly, also, the case is not to be regarded as a usual type of manic-depressive psychosis, with its relatively clear-cut affect disorder, combined with which there may be delusions — somatic or self-accusatory, more rarely paranoid. In this case the affect disturbance is secondary, and is dependent upon a host of other factors which in general we ascribe to psychoneurosis.

CASE X. — A man of forty-one, has been known to charitable organizations for over three years. Previous to that he had been employed as a car painter, earning \$8 per week. His employers stated that they had never seen a man who was so anxious "to lie down on his job." He would be inactive for hours at a time, unless some one compelled him to work.

After about two years of illness, which physicians could not diagnose, he was, in 1915, sent to the North Reading Sanatorium for tuberculosis. There he improved quite rapidly, and, his family being under the care of the Associated Charities, he was examined from time to time at various out-patient departments to discover what his trouble was. One consumptive hospital found that what tuberculosis there was had been arrested. Light out-of-door employment was secured for him, driving a delivery team, but patient seemed to feel imposed upon when asked to do anything.

He was very irritable, would become displeased without provocation; his wife thought that at times he did not seem rational, that he talked queerly, believed that she had been pregnant and that she had been unfaithful to him, for all of which there was no basis. He threatened to poison the children, he threatened his wife's life, and he would wander

around at night, apparently not in his right mind. Several times he threatened to jump out of a second-story window, becoming displeased over some slight matter. He brooded over pains, felt that he was a very sick man. His clergyman believed that he was just lazy, and that he had been demoralized by the State sanatorium, where he did not have to work; but it seems that he had been apathetic and unambitious for a long period before going to the sanatorium.

If any of his family became ill the patient developed a sympathetic illness, and seemed to suffer much more acutely than the one who was really ill. This was especially true at the birth of the children and during the term of pregnancy.

The patient came voluntarily to the hospital on Oct. 27, 1917, at the suggestion of the social service department of a general hospital. Stated that he left the tubercular sanatorium because of nervousness. He could not sleep; had pains in the legs, and down the back, and in the head. These pains had been getting worse. He was too weak to work; easily fatigued; there was a buzzing in the left ear. No hallucinations; no delusions. Somewhat depressed at time of admission. Said that he was subject to blue spells, when he did not care whether he lived or died. Not suicidal. Complained of a great deal of insomnia.

Physically, he was well developed and obese, had a red fissured tongue and red throat, and slight speech defect. Signs of some consolidation of both apices, and upper part of right lower lobe. Blood pressure, 142-108. Slight enlargement of cardiac area to the left. Deep reflexes lively. Urine negative. Spinal fluid negative. Wassermann reaction negative.

Mentally, patient was accessible, somewhat depressed, wondered if he would ever get strong, and worried about his family. He had a sixth-grade education; his grasp on school and general knowledge was meager. Said he had never been strong, and complained a great deal of pains and aches. Thought that he was of a normal make-up; spoke of blue spells, and times when he did not care whether he lived or died, but never had the nerve to kill himself, and did not think about it. No hallucinations; no delusions. Thought processes were slow and limited to his own condition and vague sad thoughts about his family. Felt that he needed rest and out-of-door treatment. Thought that he had weakened his nervous system by overlifting. The intelligence rating was 11.8 years on the Point Scale, a regular examination.

The symptom complex here is that which is ordinarily ascribed to neurasthenia: namely, pains, weakness, easy fatigue, and fixation of ideas upon the physical condition. During the patient's ten days in the hospital he did not improve. Because of the low mental rating he was regarded as a primarily subnormal person, who had neurasthenia; without, however, any very definite history of severe nerve exhaustion previous to the onset of symptoms.

On December 20, the patient was returned to the hospital by the police because of an attempt at suicide. Patient, however, denied this, but said that he might have made a bluff. Claimed that his head was better than when he was here two months before, but his nerves and stomach, and a burning feeling around his genitals and frequency of micturition bothered him.

It appears that he ran out on a third-story porch and threatened to jump off, and this was his bluff at suicide. At another time, when he was feeling very blue and depressed, he picked a knife off the table and drew it across his throat; his wife thought he meant it. He remained accessible, with fixation of ideas upon himself. He developed several times the idea of impending death, when he was very much agitated. Most of the time he was worried and depressed. On one occasion he made an attempt to escape because he wished to go home. His condition of agitation varied somewhat, but, as a rule, he was rather uneasy; was continually questioning the doctors about his condition, and about going home, insisting that he was perfectly all right. Analysis of the gastric contents revealed nothing abnormal, although it cleared up the patient's idea that his stomach was out of order. He would beg for one more chance to prove that he was not insane, and could go to work and support his family. There were several periods when he thought he was going to die. Continued restless, depressed, and worried until transferred on Jan. 29, 1918. During this period he lost about twenty pounds in weight.

From the descriptions obtained, and from the examination of the patient, it appears that he had always been a subnormal person and of the psychoneurotic type throughout life; with a fixation of ideas upon physical ailments at about the age of thirty-eight; since which time, and because of this complex, he had been unable to work. A very important point is the high diastolic blood pressure, ranging from 98 to 106. This, in general, means capillary fibrosis, and this in turn may give rise to pains in various locations. Because of his mental state, and the depression associated with it, he made attempts at suicide, or at least made threats of suicide as a means of obtaining sympathy. His temperament may be described as that of the cyclothymic, although his upper level was never one of great activity.

A case of this type really goes beyond the ordinary neurasthenic, chiefly because of the lack of a real appreciation of the situation. It is not typical of manic-depressive psychosis; he does show an anxious depression, although the depression is perhaps more subjective than objective. There were not at any

time any self-accusatory ideas nor any definitely formed somatic delusions. The ideas present are much vaguer than the ordinary somatic delusion, and definitely of the psychoneurotic type.

Because of the capillary fibrosis, of the original low level of the individual and the possible concomitance of involutional factors, the prognosis is not particularly good.

This patient is obviously *insane*, in the legal sense, and so needs to be committed in order to prevent the possible success of his suicidal attempts. *So, although his psychosis is of the psychoneurotic type, he is insane and as such committable.*

In March, 1918, he is agitated, apprehensive, self-accusatory and restless. The case is regarded as one of manic-depressive at the institution to which he was transferred.

SUMMARY.

The first point of interest lies in the differentiation of psychoneurotic from psychotic states. In almost all of the cases presented the diagnosis is rather perturbing. Indeed, in some it appears rather clearly to be other than psychoneurosis. Yet in most cases the state seems to be what we call psychogenetic in origin, and there are many symptoms of a psychoneurotic nature.

It is very difficult to define simply and accurately the differences between psychoneurosis and psychosis. In both the symptoms may be of the same type, — pains, somatic ideas, emotional and ideational difficulties. The great outstanding difference seems to be that the psychoneurotic resist the ideas, where the psychotic accept the ideas, incorporate them into the personality and elaborate them. There are also fatigability, sensitiveness and worrying as symptoms of the psychoneurotic state, which are not usual in the psychoses. It is readily seen that the borderline is tenuous and decision often difficult. In such cases the reaction to suggestion and explanation may be very important in determining the true diagnosis. Such suggestion is often only temporarily accepted even by the psychoneurotic, so that this is not an infallible guide to correct diagnosis.

Most of these patients are obviously insane in the sense earlier given. Such patients as Case I (suicidal attempt); Case II (successful suicide); Case III (dementia præcox type of incorporation of ideas); Case IV (depression causing inability to care for self); Case VII (seclusion, suicidal attempts); Case IX (somatic delusions (?), psychosexual disturbance); Case X (attempts at suicide, agitation); are clearly in need of mental hospital care and

treatment, for their own protection and in the attempt to alleviate the condition. Such cases are not suitable for out-patient treatment. Yet with the exception of Case III, Case VII and Case X, the symptoms are certainly those of a psychoneurosis.

Neurotic persons are especially likely to be thrown off balance under external stress and strain. This was true in Cases II, III (?), IV, V, VI (?), VIII, IX (?). In Case III the cause possibly lay in the distasteful work and the reaction to masturbation. In Case VI the external stress seemed to be related to a cause for depression, usually the death of a loved one, which brought up the vicious circle of ideas regarding her own death. In Case IX the cause is not quite so clear, and here, furthermore, the ideas are more incorporated into the personality. In the other cases the cause seems quite clear. In Cases I, VII and X the external cause is not so apparent. In fact, the exact cause does not always clearly appear. This, of course, is more like the origin of psychosis.

Thus, Case I seems possibly associated with alcohol (involution ?); Case VII with hypertension, and some organic brain lesion (type not clear); Case X with constitutional inferiority, hypertension and involution, — all of which are factors which usually do not produce states of this sort, at least in our experience. Promptly the question is raised as to the relation between these *possible causes* and the observed state. But it does not seem that we have progressed far enough in etiological investigation, either psychic or organic, to do more than note the associations in these cases and to await the results of therapy. There is no *a priori* ground for believing that a *particular cause* is necessary, providing that the *soil* be right. We could phrase it thus: any cause on particular soils, or particular causes on any soil — although this goes somewhat too far, it roughly approximates the truth.

Accordingly it appears that differential diagnosis of psychoneurosis versus psychosis is not always easy; that external and internal causes may produce much the same state; that some psychoneuroses (symptomatically) run a manic-depressive course; that psychoneurotic symptoms may occur as the prodromal signs of dementia præcox; that psychoneurotics not infrequently commit suicide; that many are insane; that such causes as alcohol and arteriosclerosis may operate to produce a syndrome not to be distinguished from psychoneurosis.

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BULLETIN

OF THE

MASSACHUSETTS COMMISSION ON MENTAL DISEASES

(PUBLISHED QUARTERLY)

APRIL, 1919

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT BOSTON

BULLETIN

OF THE

MASSACHUSETTS COMMISSION ON MENTAL DISEASES

(PUBLISHED QUARTERLY)

EDITED UNDER THE PROVISIONS OF ACTS OF 1909, CHAPTER 504, SECTION 6, BY

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APRIL, 1919

PUBLICATION OF THIS DOCUMENT
APPROVED BY THE
SUPERVISOR OF ADMINISTRATION.

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THE SHATTUCK LECTURE.* SHELL-SHOCK AND AFTER.

BY E. E. SOUTHARD, M.D., BOSTON.

ABSTRACT.

Introduction.

Neuropsychiatry.

Neurosis defined by negatives.

Organic lesions produced by detonations.

"Periorganic" functional cases (functional symptoms about an organic nucleus).

Trench situations and sequelæ.

Neuroses and "weak spots."

Imaginary *versus* non-existent symptoms.

To be an analyst of Shell-shock means to be a neuropsychiatrist.

National opportunity.

Work of National Committee for Mental Hygiene.

Importance of study of the Shell-shock victim as an individual.

Neuropsychiatrists in Army and Navy, and the possible prevention of Shell-shock.

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The future of American neuropsychiatry.

Orthopedic and psychological shares in the work on Shell-shock important.

The term Shell-shock denotes almost nothing, connotes everything desired.

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"Shock."

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Shell-shock and epilepsy.

Shell-shock and alcoholism.

Shell-shock and focal brain disease.

Shell-shock and bodily disease.

Shell-shock and old age.

Shell-shock and schizophrenia.

Shell-shock and cyclothymia.

The therapeutic field: miracle cures and reconstruction.

General relations of Shell-shock.

Babinski's splitting of dynamic disease of the nervous system into a psychopathic and a physiopathic fraction.

Called to the Shattuck Lectureship rather hastily, and found, as are we all, in a general tempo of haste and unpreparedness, I still felt in duty bound, as neurologist and psychiatrist, to speak on the moot topic of my special field, viz., Shell-shock.^{1,2} My predecessor in this old lectureship, my friend and colleague Can-

* Read before The Massachusetts Medical Society, at Boston, June 18, 1918.

non, was constrained to speak on that other shock,³ more familiar to physicians and especially to surgeons, namely, surgical shock. And Cannon was able, with his marvelous equipment in physiological theory and experimentation, to provide the members of our society and a wide circle of readers with a fund of ideas and suggestions concerning surgical shock, that for obvious reasons I cannot hope to rival for Shell-shock. But in any event, were the second Shattuck Lecture during this war to be given by a neurologist and psychiatrist, the topic simply had to be Shell-shock, even though this self-same Shell-shock be, — to use the neat phrase of another friend, colleague and physiologist, Porter, — a mere *swashbuckling* disease,⁴ this Shell-shock, compared with the more acutely terrible and life-in-the-balance thing we know as traumatic or surgical shock.

You will note the bungling phrase: neurologist and psychiatrist. Before the war we hardly knew how to designate ourselves, aware that a neurologist must be something of a psychiatrist and *vice versa*. In the Washington crucible, with all our doubt and scorn of the hyphen, nevertheless neurology and psychiatry have got hyphenated: the field of *neuro-psychiatry* has been laid out; *neuropsychiatric* units have been planned and established; and *neuropsychiatrists* may be said to exist officially.^{5,6} Whether the neurones or the psyche can be said to have the place of honor in this new group of terms, it would not do to announce: first or last is honorable enough! And with the abolition of the hyphen, a proper traffic may be kept up amongst all parts of the new field of neuropsychiatry. Let us be proud, too, that the surgeon-general of our Army has established a Division of Neurology and Psychiatry, placed in charge of an eminent neurologist, Col. Pearce Bailey, well known both for his practical work and for his published book of many years' standing on accidents and injuries to the nervous system.^{7,8} There is no doubt that the surgeon-general's step would scarcely have been so soon taken had not the news of so-called Shell-shock been brought back to us by an emissary of the National Committee for Mental Hygiene, Dr. (now Lieutenant-Colonel) Thomas W. Salmon.⁹ The outstanding statistics, the general color of the situation, and something of the variety of methods of care and management of these cases, were brought to us by Colonel Salmon, who now as director-general of psychiatry overseas is already beginning to show results from his ripe organizing ability and his impartial grasp of the opinions of the men and the practical aspects of things — whereunder we must place, under *men* also *military* men, and under *things* also

military camps and hospitals. The new military machine must needs creak: not all the ideas of the brilliant Col. Emory Upton have, we understand, been embodied in the machine. To have implanted neuropsychiatric ideas in a perfectly willing but all-too-busy surgeon-general's office is greatly to the credit of all in the work, but especially to Bailey and Salmon. But I doubt if even their unremitting labors would have hatched a new division in the surgeon-general's office had not the world been apprised of the appearance in the ranks of all the belligerents of an extraordinary malady or maladies called Shell-shock.

Shortly after the initial flurry in which all the belligerents found themselves, — and during which a great number of hypotheses were set up concerning the apparently new disease, shell shock, — more sober reports began to arrive, and the majority of so-called Shell-shock cases came to be recognized as instances of functional neurosis rather than of organic disease of the nervous system. It is well to stress the fact that it is a majority, and not the absolute entirety, of the group of cases *called* Shell-shock that do turn out to be neurotic, since in the first place, puzzling admixtures of organic and functional conditions are by no means uncommon, and since, in the second place, organic disease of the nervous system itself has always been capable, and has proved in this war especially capable, of imitating the phenomena of functional disease. Nevertheless, by and large, the problem of Shell-shock statistically taken seems beyond cavil to be the problem of the neuroses.

But what, after all, are the neuroses? What do we really know about the neuroses other than to say that they are *not* distinguished by the existence of the structural lesions which characterize organic disease of the nervous system? Is not the definition of neurosis purely by negatives? However true this definition by negatives may be from the genetic and general pathological viewpoint, the work of Charcot,¹⁰ and in particular of Babinski,¹¹ has yielded a number of positive features from the clinical viewpoint, which to some degree make up for the lack of anything positive in the neurones themselves as studied post mortem. An eminent German has recently declared that the data of this war itself go far to prove some of the long dubious contentions of the Frenchman Charcot;¹² and the work of Babinski during the war has strengthened and developed the conceptions of his master Charcot, as well as the antebellum conceptions of Babinski himself. Whoever wins the great war from the military point of view, there can be no doubt as to what writers contributed most from

the war data concerning the doctrine of hysteria, especially concerning the theoretical delimitation of hysteria from other forms of functional nervous disease. There can be no other answer than that, in theoretical neurology at least, the French have already won the war, if only by means of the remarkable concept set up by Babinski of the so-called *physiopathic* (that is, non-neuropathic and non-psychopathic). But to this novel splitting of the functional neuroses into a psychic and non-psychic group, I shall come back later. For the present, the point I want to make is that, when so much theoretical doubt concerning organic and functional neuropathy holds sway, the practical doubts in the individual case under the varying conditions of military practice and in the upheavals of civilian practice, must be still more in evidence. Case after case described in the literature of every belligerent has passed from pillar to post and from post to pillar before diagnostic resolution and therapeutic success. Colleagues meeting, for example, at the Paris Neurological Society, find themselves reporting the same case from different standpoints, — the one announcing a semi-miraculous cure of a case which another had months before claimed only as a diagnostic curiosity. In the midst of such discussions and controversies, there must inevitably be a renaissance in neurology.

In England, too, controversy has not been lacking, and particularly in the therapeutic field, the believers in sympathy and firmness,¹³ in the electric brush for startling a patient out of his hysteria,¹⁴ and in the process of slow rationalization by the patient of his interior ills,¹⁵ have all raised their voices. The world has naturally learned a thing or two in these latter years, and so does not follow the lure of 100 per cent in the statistics offered.

What sort of thing faced the military surgeons? It cannot be the province of this lecture to rehearse the cases in detail, and indeed any small selection, such as a score or even fifty or a hundred, of cases could give but a ragged and pale impression of the situation. I shall limit myself to the dangerous device of small points and excerpts from a considerable variety of cases.*

Shell bursts and other detonations can produce *hemorrhage in the nervous system and in various organs without external injury*. Thus a man died from having both his lungs burst from the effects of a shell exploding a meter away. Hemorrhage into the urinary bladder has been identically produced. Lumbar puncture

* The references to the cases mentioned are to be given in the book mentioned under reference 6.

yields blood in sundry cases of shell explosion without external wound, and Babinski has a case of hematomyelia produced while the victim was lying down, so that the factor of direct violence through fall can be excluded. In sundry cases not only blood but also lymphocytes have been found, sometimes in a hypertensive puncture fluid.

Accordingly, *in cases of alleged Shell-shock, the hypothesis of focal structural damage to the nervous system or its membranes has to be raised.*

A herpes or the graying-out of hair over-night can suggest organic changes. A case may combine lost knee jerks (suggesting organic disease) with urinary retention (suggesting functional disorder).

Accordingly, *in cases of alleged Shell-shock there may be a combination of structural and functional disease; but, when the problem is statistically taken, the majority of cases of alleged Shell-shock without external wound prove to be functional, as indicated by their clinical pictures.* Thus, after a mine explosion, a man was hemiplegic, tremulous and mute. After sundry vicissitudes, the tremors were hypnotized away. Then the mutism vanished, to be supplanted by stuttering. Finally the hemiplegia remained. So far as the mutism and the tremors went, this man might belong in the majority group of Shell-shock cases, namely, the functional group. Assuming the hemiplegia to be really organic, we should regard this man as a mixed case, organic and functional.

There is a group of war neuroses, especially clearly brought out in cases of ear injury, in which the functional disorder surrounds the organic as a nucleus. But these "periorganic" neuroses are no proof that the neuroses in question are organic in nature. Hysterical anesthesia, paralysis, or contracture may occur on the side of the body which has received a wound: *the process of such a peritraumatic disorder is, nevertheless, a functional process.*

Sometimes the symptoms are very general. Meige's returned soldier, an artist, wrote: "I went to a novelty shop . . . Everything . . . a contrast to our trench misery. I was . . . like a schoolboy on vacation. All of a sudden I felt that my strength was leaving me. I stopped talking; I felt a bad sensation in my back; I felt my cheeks hollowing in. I began to stare and the trembling came on again."

Gaupp's German soldier wrote in a private letter, *e.g.*: "A soldier scolded me because I was running senselessly up and

down; finally I got into the Leipzig train . . . everything then got more and more confused in me; I heard my mother call; then I heard shooting again; and finally I was entirely confused. I came to my senses in a room in the station, and towards evening was frightened again at a loud noise somewhere, or a train passing. Then I was told what I had done in the train. I had cried out and raved, tried to get out of the car, called for my father and mother, wanted to go home, imitated shooting; allowed myself to be calmed a little, but began to shout again at very loud noises. When I was out of the train I bit a soldier and tore his whole coat open, so then I was carried to the hospital here in an auto."

After listening to the French artist's account of his Shell-shock tremors and the German soldier's account of spells, possibly of an epileptoid nature, on his homeward way, let us turn to the more stolid account by a British soldier, a case of Batten's. The man wrote his tale out in a state of complete mutism. Plunging into the middle of his story: "The next place we went to was Rue de l'Epinette and we had an awful time there, just before Christmas. We went into the trenches and we were up to our middle in water, and in some places it would have taken you over the head. We got relieved by the Royal North Lancs. . . . We were just making some tea when the fall-in went and we were told that the Germans had broken through the North Lancs. . . . If the Germans had attacked again, we could not have tried to shoot as we were hardly able to stand for the cold and with the wet kilts on our legs it was awful. We got nothing to eat except three biscuits that some of the men went out and got. When we came out of the trenches on Christmas Eve, we all looked like old men and a lot of them had to be carried. . . . The next place we were at was at that big fight at Neuve Chapelle. . . . We got the trench all right and I got orders about 4 P.M. to go back to our own trench and bring along the belt-filling machine belonging to the machine gun. . . . We got into our trench all right and I got this box on my back and started back to the trench. I was just stepping out of the trench when a shell burst just over my head and I went down. When I came to my senses I was lying in our support trench where I had been carried by two of the men of the Fourth Black Watch. One of them said something, but I couldn't hear him and I tried to tell him so, and then I discovered I could not speak."

So much will suffice to give some idea of trench situations and their sequelæ. The literature contains beautiful examples of

narratives elicited under hypnosis in which all the forgotten details are brought richly back.

Schuster claims a hypersensitive phase after the shell explosion, during which time the patient is particularly subject to hysterical symptoms. A good many cases specially reported by excellent observers demonstrate that the same kind of hysterical or neurasthenic effect may occur in the absence of any obvious shell explosion, emotion, or somatic disorder of any sort. What is the nature of these disorders? The literature is practically unanimous on the point: *We have to do merely with the classical problem of the neuroses*, and when all the data are some day united, we shall doubtless know a great deal more about the neuroses. That the process, whatever else it does, is rather apt to pick out pre-existent weak spots in the patient (the habitual gastropath becoming subject to vomiting; the old stammerer stammering once more or even becoming mute; the man always "hit in the legs" by exertion, now becoming paraplegic) is obvious. The striking instances in which an old cured syphilitic monoplegia, or an old hysterical hemichorea, come back under the influence of shell explosion in precisely the limits and with precisely the appearance of the former disease, indicate how various a factor may be the *locus minoris resistentiæ*.

Would that the medical profession understood these neuroses at their true value! Only too frequent is the impression on the part of the profession that *imaginary symptoms* are by the same token *non-existent*! I have heard even a physician well trained in somatic lines say that Shell-shock did not exist because Shell-shock was nothing but neurosis, and neuroses were characterized by imaginary symptoms, — accordingly neuroses, being imaginary, do not exist! All of which reminds us that many of the profession were entirely skeptical when Charcot made his original observations. Some men here in America felt that, whereas hysteria might occur in Paris, it did not occur to any extent in America. The Shell-shock data of this war will abundantly prove to the profession the existence of the neuroses, and I feel that physicians will have to brush up their ontology to the extent of conceding that *a symptom may be, in a sense, imaginary and yet not in any sense non-existent*. Babinski points out a case of *hysterical paralysis* of a leg which led the patient to lean so heavily upon his arm as to produce an organic crutch paralysis. It would be to no point to argue that the hysterical paralysis was here non-existent. Of course we shall have to meet the false analogies drawn from methods of cure. If a paralysis can be cured in a

few minutes by the electric brush, or by hypnosis, or on emergence from chloroform, or by some other modern miracle, is it too much to ask the *profession not ever to say* that this rapid and seemingly miraculous cure was brought about because the disease was non-existent?

The fact that a soldier may get war dreams though he has never been in the fighting zone and never by any chance observed the circumstance of war, or the fact that a man can become mute on the second day after a shell explosion because the night before he had dreamed of some hysterically mute patients on his ward, — these facts again, although they argue a psychogenic origin for the phenomena of so-called “Shell-shock,” do not at all mean that the actual physical explosion in other cases may not have its very tremendous importance in those other cases. This is shown by the exceedingly interesting phenomena of localization or determination of symptoms to a given region under the special local influence of the explosion. Thus, in the schematic case, an explosion to the left of the soldier produces anesthesia and paralysis on the left or exposed side. Now and again a case will show such anesthetic and paralytic phenomena upon the side exposed to the explosion and some hypertonic, irritative phenomena upon the other side. One gets the figure in one’s mind of an organism fixed, immobile and numb, on the spot by the explosion — and the other half of the body, as it were, attempting to run away from the situation. One side of the body, as it were, plays ‘possum, the other tends to flight.

Of course these physical phenomena should not blind us to the emotional ones. Now and then the multiple causes of a case may be analyzed as, for example, one of blindness in which a series of factors emerged, such as excitement, blinding flashes, fear, disgust and fatigue. I cannot here go further into these details, and I need no longer insist upon the fact that *surrounding the problem of Shell-shock means surrounding the problem of nervous and mental diseases* as a whole, and that thus to be a Shell-shock analyst means to be a neuropsychiatrist. In the first place, the organic problems of the nervous system are brought up constantly in differential diagnosis, but the functional problems divide themselves up in a perturbing manner into a fraction properly termed the “psychopathic” (that is, after the manner of hysteria) and “non-psychopathic” (that is, after the manner of reflex disorders of Charcot, newly named “physiopathic” by Babinski).

The judgment, what we in America should do about all this,

was none too easy, particularly as, besides the mission of Colonel Salmon, above mentioned, no scientific commissions were sent abroad, and no authoritative neurological workers from England or France had appeared upon our soil until a quite recent date. The Research Council is now under way, however, and in its second annual report chronicles as a special achievement of the division of medicine and its subcommittee on psychiatry, that a laboratory for the study of Shell-shock is to be established overseas.¹⁶ The council has also announced that it has under consideration plans for sending commissioners and for receiving distinguished visitors dealing with the great topics of the war, among which, doubtless, Shell-shock will assume a high place. Before we condemn too lightly tardiness in these matters of scientific intercommunication, we must consider our otiose past. It is now some twenty-five years since our great paleontologist, E. D. Cope,¹⁷ wrote concernedly over the future of thought in America. He pointed out how the European had come to America "to escape loathsome tyranny, political, social or theological, or to better his conditions of physical living." Physically, Cope went on to say, the transplanted European has bettered himself; but has he bettered himself mentally? "What," wrote Cope, "is the outlook for the American? Will the process of natural selection only, the 'devil-take-the-hindmost' doctrine of Darwin, be sufficient to develop the higher mental faculties, or having developed them, enable them to survive and to become general or not?"

"In the first place, we lack in America," continued Cope, "the great stimulus to mental progress, — international jealousy and emulation. In this respect we are situated very much like the Chinese, but if anything, less favorably." If what Cope said was true twenty-five years ago, it is, sad to say, still truer to-day; and indeed in our own specialty of medicine, and in my particular small corner thereof — neuropsychiatry — instead of hitching our wagon to the international star of jealousy and emulation, we have reversed the process and hitched our stars to the Teutonic wagon; and I can say for the nomenclature and terminology of mental diseases with the hearty approval, no doubt, of the body of the profession, that the creaking of that wagon is still heard in the land, and this despite the fact that our English vocabulary for the things of the mind, thanks to the philosophical speculations of the eighteenth century, is heavy enough in itself to make any wagon creak.

But when it came to the point of sending our neurologists and

psychiatrists abroad to plunge into the midst of a friendly but none the less sturdy rivalry and emulation with our English, French and Italian *confrères*, what was to be done? Hereupon the work of the National Committee for Mental Hygiene, with its organization planned and perfected by Lieutenant-Colonel Salmon, and carried on with acuteness and impartiality by Dr. (now major) Frankwood E. Williams, stepped in to do what it might. The last time I heard statistics, I learned that over 360 nervous and mental doctor-men were on the rolls of the Division of Neurology and Psychiatry. Some of these, being comparatively well trained both in neurology and in psychiatry, were plunged forthwith into the service. You who have scanned the newspaper lists have seen something of their assignments to camps and hospitals in this country and overseas. But many of these candidates for work in neuropsychiatry and for the onerous work of divisional and post psychiatrists, had to be specially trained. Thereupon the surgeon-general's office, through the Division of Neurology and Psychiatry, took a hand and sent many of these men for training to different institutions, including the all-too-few psychopathic hospitals and psychiatric clinics of a nation somewhat tardy in these matters. The men who needed brushing up in neurology were sent to such centers as the Neurological Institute in New York, and the Post-Graduate Neurological Clinic in Philadelphia. The men who needed brushing up in psychiatry were sent, for example, to the psychopathic hospitals at Ann Arbor and at Boston.

It was while I had the task of giving brush-up instruction to a number of the surgeon-general's men, as military director of the Psychopathic Hospital in Boston, 1917-18, that I began that collection of cases which gave me the courage to speak to you to-day concerning shell shock in its intra-bellum and post-bellum aspects. In the collection of upwards of 700 cases from the literature, 589 of which are embodied in the published series, I found case after case which seemed to be far more informative than any of the dry-as-dust dogmatic statements which I found in sundry places.* Had not my valued colleague in bibliography,

* I bear in mind a phrase of Justice Holmes in comment upon the Langdell case system as used in the Harvard Law School (which system, as you may remember, gave Cannon his idea of teaching medicine by the case system), that nothing taught by the case method lies "dead before you on the printed page." In passing, I may make the obvious remark that the Langdell case system as applied to the law was nothing more or less than the only method in high esteem in medicine for many decades, nay, centuries, and that the readers of *Sepulchretum Boneti*, or even of such works as those of Andral, may see to perfection (so far as the lights of those days permitted) the workings of the case method.

Private Norman Fenton, been sent off on his proper military duty in Base Hospital No. 117, we might possibly be reading cases yet. However, I am bound to say that with the publication of the books in the "Collection Horizon" and their publication in England and America under the editorship of Sir Alfred Keogh, many of the principles are beginning to stand on their own feet and to deserve the honor of coarse print.

I make no doubt that this plan has already made itself effective, and that the men thus trained will not only equip themselves splendidly in the war, but also, many of them at least, return to neuropsychiatric work on a high level in post-bellum days. It is no secret, however, that the National Committee for Mental Hygiene and the war work committees of the American Neurological and the American Medico-Psychological Associations had to drag the depths of our profession for suitable men.* All honor to their concrete results!

Well, if we come back with our shields and not upon them, all these matters will doubtless be righted after the war. For the moment, our neuropsychiatric contingent appears to be doing its job well; we learn that some 20,000 men have been excluded from the draft army for reasons lodging in the nervous system, and among these we hope we have excluded many a candidate for neurosis, functional or organic. To be sure, we must not raise the hopes of the public too high, since straightforward evidence from the various belligerents shows us that perfectly normal men, so far as any physical or mental test can call them so, and so far as any investigation of their heredity and their acquired soil can determine, have, nevertheless, become subject to some of the classical neuroses. We must now erect the hypothesis that *the classical neuroses may in some, though certainly a minority of cases, afflict normal men*. Under the war conditions of investiga-

* In passing, I cannot help commenting on how tardy, nay, delinquent, our nation has been in its provision for the development of neurological, psychiatric and neuropathological research. For a nation that could produce a Brown-Séquard and a Weir Mitchell our record is unhappily poor. Some day, when not overborne by deficiencies in the concrete, I hope to write a letter on the neglect of research upon the brain by the great American foundations. Perhaps so great an alarm as Shell-shock itself may serve to waken these foundations up. One day I remarked to one of the great foundation men: Since there could be no question that the brain is the great tool of research, why should there be any question of turning that research tool upon itself? The expected answer came: "My dear fellow, you are in no worse case in pleading for your science than all the others pleading for theirs." I went away, and thereafter looked about me to see what lines of research were neglected more grievously than those of brain and mind, and I found no other branch in so stepmotherly a bed. I will make one exception. Possibly pharmacology is a branch as grievously neglected; but there, again, very possibly we have hitched our stars to Teutonic wagons, or, easier still, bought wagon-loads of German drugs and let it go at that. Perhaps the neurologists and pharmacologists might make common cause in this plaint, since the neurologists, at all events, would greatly benefit by even the smallest advance in pharmacology.

tion touching the family and personal histories of the men, perhaps we should not be too sure of this hypothesis; but the army records will after the war allow us to make or break the point forever and thereby throw the clearest light upon the vexing problems of industrial medicine, wherein progress in general has been so slow on account of the partisanship of the corporation and plaintiff's attorneys. At all events, the neuropsychiatrists, aided by the psychologists with their elaborate mental tests, have done their best to prevent Shell-shock so far as the problem consists in excluding nervous and mental weaklings.

Overseas, meantime, many men are at work in the English, and some in the French, hospitals studying the methods of their allied *confrères*. These men are for the most part of the ardent younger strain, though in some cases older men with established reputations have been able to go. We hear that most of the medical profession in every belligerent country, except our own, has in a sense been mobilized for the work.* If we are to take our place among what Mr. Usher has recently termed "the Atlantic powers," we must in all fields thoroughly mix our thinkers and workers with those of Western Europe, and the task which faces medicine is so great that a peculiarly intimate commixture, or indeed, a general *compounding*, is on the cards for physicians. And, whereas in sundry branches of medicine we have a good deal to teach our trans-Atlantic fellow physicians, I am afraid that in the field of neuropsychiatry the flow will not be quite that way.

Perhaps I here talk too much of futures for American neuropsychiatry; but any one who has dealt with the nervous and mental flotsam and jetsam in civilian practice, say in the wards or out-patient department of the Psychopathic Hospital, or in any similar zone of social advance, must know that the fate of the individual patient — whether an ex-soldier or an industrial wreck — will depend upon the community standard in the matter of its medical experts.

* What our higher councils may determine in this matter for our own country I do not know, but, at all events for the neuropsychiatric branch of the profession, it would seem within the bounds of reason to consider a plan by which the entire body should be alternated in work overseas and on this side, so that the whole group shall be permeated with the lively new ideas of the allied world. Not being for the moment even a contract surgeon, I can safely say that little or nothing, so far as I can see, prevents the execution of such a plan except two matters, logically microscopic in size, but looming very large in the military mind, viz., the impropriety of high military rank for reserve men of high civilian achievement, and the insistence upon giving applicants no promises concerning their futures. I have heard these questions argued in half a dozen cities by men in and out of the military service, and, for my part, I find the whole matter reduces in the end always to one phrase: "*They will never do it!*" Who the *they* may be, I shall leave to your imagination, though I am sure the dreadful Juggernaut is not the surgeon-general's office.

We are all very proud of the part our country is taking in reconstruction of an orthopedic nature.¹⁸ Perhaps we take our orthopedists here in Boston too calmly. It would not do to praise orthopedics too highly in the trolley car, for the man across the way might turn out to be an orthopedist, and it would never do to praise a Puritan to his face! No one but knows that the structural side of human refitting will be done quite to the Bostonian taste during and after this war, and I do not need pause in laudation of the competent men in the reconstruction hospitals and their eager adjuvants, the occupation-workers who are now being trained.

In another direction, the neuropsychiatrist also looks for aid, namely, in the direction of psychology.¹⁹ Not only in the matter of exclusion of unlikely draftees, but also in the matter of vital adjustments, we must turn to psychology. It is not (if I may venture into this thorny path) that we are to hand over our function as diagnosticians and therapists to psychologists, any more than we hand over these functions to chemists. After all, psychologists and chemists, though they represent sciences in some sense greater, or at all events more general, in their scope than medicine, are not and inevitably cannot be diagnosticians of diseases. Nothing in the Grand-Palais in Paris or elsewhere is any better probably than the work at Hart House, that building which was to have been a students' club in the University of Toronto, but which now houses the shrewd devices and human enthusiasm of the psychologist, Prof. A. E. Bott, who seems to combine with his psychology an orthopedic and neuropsychiatric sense which would do credit to a doubly-trained (orthopedic and neurological) physician, were Dr. Bott such and not a psychologist merely. Some of Bott's ideas he gratefully refers to the psychologist Franz, the scientific director of the Government Hospital for the Insane (St. Elizabeth's), Washington.

The divisions of the surgeon-general's office devoted to neuropsychiatry, to reconstruction, and to psychology, not only theoretically must, but practically do, co-operate to the end of reconstruction not only of the so-called "Shell-shockers," but to every sort of neuropsychiatric case.

I intend now to turn to some considerations concerning the term "Shell-shock" itself, a term which is, and ought to be in some senses, taboo. I shall follow my discussion of the term with some account of the relation between Shell-shock and the main orders of mental diseases, showing that the Shell-shock problem

cannot be surrounded except by the widest and deepest neuro-psychiatric processes of diagnosis and therapy. First, now, concerning the term *Shell-shock*. William James called "pragmatism" a new name for old ways of thinking. Yet the term pragmatism was such an exact and denotative rendering of those old thinking ways that no one can now ever go back of the new term. But what can be said for the new term *Shell-shock*? Is it not a new name for old diseases, and a new name so inexact and non-denotative that nothing but regret could follow its scientific adoption? Everybody concedes that the diseases called *Shell-shock* are as old as medicine, and only to be distinguished as more frequent in this war than ever before, and as occurring in the male in unexpected numbers. But more increased frequency does not necessarily argue anything scientifically novel about these diseases, and there were always enough examples of these affections in the rougher sex to permit sufficient study.

When James chose the name pragmatism for some ways of thinking, it was the deep and dialectical professor finding a term for common views. The unknown inventor of the term *Shell-shock* was presumably neither deep nor dialectical. He was in some sense doing the opposite of James' exploit with the term pragmatism; he was finding an inexact and non-denotative term *i.e.*, *Shell-shock*, for the more or less exact medical concept, *neurosis*, a term which, just by reason of its Hellenism and its *high-browism*, he could not understand and would not use.

The term *Shell-shock*, let us grant, is inexact and denotes little or nothing. But why drag in exactitude? Above all, why lug in denotation as an aim in the present world? *Shell-shock* may denote nothing, but it connotes everything the laity desires. Yes, you reply, but does it not connote and suggest too much? *Shell-shock* denotes, to say the least, *shocks* and *shells*, yet we know shell shock *sans* any shock and *sans* any shell, nay *sans* either shell or shock.

Let us drop for the nonce what the term *denotes*. Does it not *connote* the war? What better symbol of the great war, by and large, both as war and as the greatest of wars, than the shell, — the shell of powder, the shell of fire, the shell of death by gas, the shell of tears, the shell of sneezing that strips the mask for death, the sea torpedo, the aerial torpedo, the mine, the shell of the psychological supergun, the shell that sank the "Lusitania," and above all, the shell of fear, the shell of the German's own psyche which he loaded in fear with all the powder and fulmi-

nates and gases that forty years of his fear could generate. Nay, the greatest of all these constituents was undoubtedly fear, and the whole of *Mitteleuropa* for these many decades had kept loading and loading itself — one giant self-bottling torpedo of fear which we poor free-swimming Yankees sometimes mistake for the aggressive anger of the crook among nations. But I am of the belief, and some Americans who stuck it out for months in Germany earlier in the great war have told me so, that fear is the bottom emotion of the Teuton and that, in the accursed filling of the great Teutonic torpedo lying there in the midst of Europe, the Kaiser and his crew served but as catalysts and enzymes, not as the ingenious devils we picture them. Why, the whole stupid game, psychologically speaking, is to implant in *us* fear and ever more fear, and every message, and every act is a shell to give us fear — and fear of what? Of real shells, of murder, of torture, of rape. The Belgian triangle of horrors, the “*Lusitania*” itself, are nothing but samples of what would serve the home market. Do you think the Germans really were *not* afraid of the Belgians, *not* afraid of Russian mobilization, *not* now afraid of our American shells and the new gases they will contain? I repeat, the Germans are born to more fear than we free-swimming Yankees readily understand, and the shell, whether of explosives for individual use, or the shell of the great god Thor’s fear in the face of the greater God — the shell remains the best symbol and token of it all.

From the shell as connotative prince of terms in this war, let us turn to the second theme of this new slang term, *Shell-shock*. If the prototheme, shell, is often to the naked eye absent, the deuterotheme, shock, is in still worse plight. One of the most telling of observations by the neuropsychiatrist, working with his division of troops, is the observation, long antecedent to the beginning of obvious Shell-shock, of sundry premonitory symptoms. In fact, the divisional neuropsychiatrist, in his heart of hearts, hopes to stave off sundry, if not of course all, cases of Shell-shock by proper preventive measures. One hyperenthusiast, at least I think him so for this war and this generation, indeed hoped to prevent by educative talks to soldiers the development of Shell-shock. But Shell-shock is doubtless not theoretically so easy to suppress out of civilization as would be, *e.g.*, syphilis.

In a shock there should be some suddenness, and I am bound to admit that many a case of Shell-shock, even if the actual shell

appears on the scene, seems to develop without that quality of attack or seizure that the term denotes.

Shock, was in fact, at the outset, a military term. Although we now define a shock as a sudden and violent blow, impact, or collision tending to overthrow or to produce internal oscillation in a body subjected to it, and sometimes even mean by shock the actual disturbance of equilibrium or internal oscillation resulting from such blow, impact, or collision, yet the term before it obtained this rather figurative use, was a military term for an attack.* Besides its military use as a term for the attack, we find the term in use both for mechanical and for moral agitations and commotions. I find that beyond the mechanical definition above given, Murray also defines shock as a sudden and violent effect tending to impair the stability or permanence of something — a damaging blow (to a condition of things, a person's health or constitution, an institution, a belief, etc.). But you will observe that a shock, in the spirit of our language, may be either mechanical or moral, but the suddenness of a shock remains its one constant feature, which it has borne perhaps from tree-stump days through barbarian assaults, down to mechanical and electrical effects, on the one hand, and moral and emotional effects on the other.

Now, in the Shell-shock group, the French very neatly distinguish what they term *états commotionnels* from *états émotionnels*. They think of the *états commotionnels* or commotional states much as we think of *commotio cerebri*, that is, of a physico-chemical happening in the brain of an essentially curable (or reversible) nature; that is, of something that falls short of being, as they say, *lésionnel*, namely, as bringing about a structural lesion. That is, they distinguish a brain with a physical focal lesion from one which has sustained a physical jar or commotion, and they distinguish the effects of both of these from the *états émotionnels* or emotional effects of an injury. The nomenclature here brings out one of the most fundamental difficulties in the whole field of so-called Shell-shock, namely, the distinction between structural conditions, microscopic or macroscopic, on the one hand, and functional conditions of a psychopathic nature,

* In fact like many roots, the origin of the root of shock is wrapped in obscurity. The French word *choc* was borrowed by various languages for military purposes, though some of the French lexicographers gallantly hand the term over to Old High German for "swing," and some of the German lexicographers, perhaps dodging such military renown, passed the term up to Old French for "the stump of a tree," as suggesting somehow that the attack of troops felt a bit like the pioneer's attack on tree stumps. However this may be, the figurative use of the term has gone beyond all military circles, only now to return in the term "Shell-shock."

on the other. The *commotion** would affect the neurones themselves in some perhaps invisible but still genuine physico-chemical way, whereas the *emotion** would affect these neurones merely after the manner of the normal emotional life, except that the neurones would perhaps deliver an excessive stream of impulses. Of course, when we get down to the undermost level of this question and seek to distinguish between invisible physico-chemical changes in neurones of a morbid character, from invisible neuronical changes and relations of a quasi-normal character, we find ourselves plumb in the midst of sundry deep questions, not merely of molecular physics, but even of metaphysics. Crile has driven some of these speculations out into the open, where they may at least be examined on all sides and disposed of according to various views. For practical purposes, we may think of what the French call *états commotionnels* as tending toward the naked-eye lesion in their nature, whereas the *états émotionnels* are something a good deal more subtle.

Shells were made, it appears, long before the idea of shock effects within the nervous system came into the general mind; thus in the seventeenth century, a gunnery book speaks of filling "small shels with fine gunpowder," and the Thomasson tracts in the British Museum (quoted by Murray) make this curious observation sometime after 1640: "'They swear they will never fight more against guns that shoot twice,' meaning the two cracks, the mortar and the shell." But these original pacifists did not yet have in mind, so far as the lexicographers teach us, the effects of shock. We gather early in the seventeenth century the mechanical idea at the bottom of the term shock.† Whether these dictionary straws indicate which way the wind blew in transferring the mechanical idea over into the moral one, I do not know; but it is very plain that the sense of the term shock is embedded in our literature in both significances: the *mechanical* and the *moral*. In the medical literature, Abernathy already in 1804 spoke of the shock of an operation. Morris wrote in 1867 a practical treatise on shock after surgical operations and injuries. The relation of this surgical shock to the nervous sys-

* It is to be observed that there is motion in each of these terms, "*commotion*" and "*emotion*," and it was, to me, a curious observation, when I was trying to follow out their early usages, that the Romans apparently used the terms somewhat in the reverse manner, regarding *animi commotio* or *permotio* as very nearly something which we would have to translate by the term emotion.

† As in the following sentence, which I also gather from Murray from Astruc on Fevers, 1746. "The corresponding parts of the medullary substance are so shocked that the animal spirits are more vigorously protruded into the nerves." And even before that date (in 1733) Belloste speaks of mercury as producing its effects by "its shocking and disengaging the fibers."

tem was probably implied in the term at first.* But while the medical mind was using the term shock in a manner curiously distant from its original significance of a sudden impact, the rest of the world was using the term shock most freely for a damaging blow, not merely to one's health or constitution, but to one's beliefs or moral situation. Congreve, for example, used this term shock in its moral sense as far back as 1694, and the idea of using the term shock for a syncope, a collapse, a concealed hemorrhage, or the effects of internal complications in sepsis, would have been quite blind to the ordinary man, since the term shock had been robbed of its suddenness by the surgeons, who had transferred a good term for cause into a somewhat poor term for an effect.

I linger over these nomenclatural matters, not merely because I like to do so, but also because the two horns of the dilemma, mechanical and moral, commotional and emotional, physical and psychical, traumatic and, as it were, merely "seismic," get well into the mind by a discussion. We see clearly that it is no superficial division of facts that we are making when we deal with Shell-shock.

At all events, you must be convinced that there is a perfectly legitimate use for the term shock for a condition which is either mechanical or moral, and sometimes both in its origin and in its effect. It is perfectly right for us to bear in mind the figure of shock as we find it in the cavalry pictures of Bourguignon (1621-76) in the Louvre, or in the more accurate detailed pictures of Wouverman (1619-68), as we see them both in the Louvre and in Dresden. Such pictures of the military assaults were very frequent in the seventeenth and eighteenth centuries. We hope for their historical interest that they shall not all be moved from the Louvre to Dresden and Berlin as a result of the war.

Then we see the shock idea in its mechanical or electrical form being subtly studied in a variety of formulæ which have never quite resolved the problem of the three bodies, and perhaps never will resolve it. We fix our minds upon the molecular profundities of the world, and wonder with Charles S. Peirce how we can transform the movements of the molecules of solids from

* The idea was of shock as a sudden debilitating effect produced by an overstimulation of the nerves, by intense pain or by violent emotion, and, by simple transfer, the term "shock" was then given to a condition presumed to be one of nervous exhaustion resulting from such overstimulation, pain or emotion; but all this is very far from the fine physiological, physical and chemical ideas concerning surgical shock which are now at our command, and the term shock passed out of the medical mind as having to do with anything except surgical shock until the renaissance of the slang term "Shell-shock" of this war.

their orbital paths into the paths that molecules of liquids move in, namely, curves, or into the rectilinear paths affected by the gases.²⁰ We perceive that the phenomenon of shock is, after all, one of the last problems to be solved by man. But throughout this development of the shock idea, the common man has used the term in a pretty obvious moral and physiological sense, and he, the common man, feels constantly not only the idea of shock as somehow conveyed from without, but somehow also setting up uncomfortable vibrations inside of his mind and of his body. Plato himself speaks of quakes of the body, using the self-same term, *σεισμός*, which is used of earthquakes.

I have thus somewhat lamely and superficially tried to sound the depths out of which the effectiveness of the term *Shell-shock* is born. It is not merely its alliterativeness and disyllabic punch, but it is that these terms both serve as containers for contained. Both shell and shock refer not merely to their outward physical figures, but also to their inward, functional, nay, psychical meaning, and incidentally the terms bring out for us to-day something of the ultimate physiological and psychological questions which confront the analyst of these conditions, whether you term them picturesquely *Shell-shock*, or more exactly, *war neurosis*.

Civilization, Justice Holmes has somewhere said, consists in the maintenance of complexity. Never has the human cerebrum (the highest aim, as Sherrington has said, of science) yet been subject to such enormously disproportionate assaults as in this war. The profound sexual cataclysms which have been thought by some to underlie the hysterical behavior of the weaker sex, have been equalled *ab extra*. It is conceivably much easier in the weaker sex, proceeding from interior lines of the sex glands and in other internal ways, to produce such curious blottings-out of function as we see in hysteria, than it could ever be to produce in the more solid and immobile male the same effects either from within or from without.*

* Whether the molecules of the male proceed in more definite orbits or quasi-orbits than do those of the female; whether in the female these molecular movements run in more curvilinear ways, may not ever be known. As to the properties of protoplasm, or of what he terms *life-slimes*, let me quote from Mr. Charles S. Peirce,²⁰ as follows: "It is true that an opinion has been emitted and defended among biologists, that there is but one kind of protoplasm; but the observations of biologists themselves have almost exploded that hypothesis, which from a chemical standpoint appears utterly incredible. The anticipation of the chemist would decidedly be that enough different chemical substances having protoplasmic characters might be formed to account, not only for the differences between nerve-slime and muscle-slime, between whale-slime and lion-slime, but also for those minuter pervasive variations which characterize different breeds and single individuals." Whether males and females sufficiently differ in their respective slimes to account for all the different features of our social environment, I would not say; but it is the province of the present war to prove that their nerve-slimes, as Peirce would say, are subject to the same kinds of liquefaction tracks. At all events, hysteria in the male is no longer a *curiosum*.

Let us leave the term shell-shock, then, with one more observation, namely that the term appears to be *a perfect term for the ordinary man*, as it means much and little, connotes enormously and denotes a minimum, and casts the hearer forthwith back upon the expert. When the ardent social worker hears the term dementia præcox, she feels herself almost entitled to believe that the patient in question is demented, or is going to become demented. A similar inaccuracy lurks about the term præcox. For that reason, sometime I intend to write a paper, entitled "Non-dementia, Nonpræcox," to contend with a notion which I regard as positively dangerous to the fate of certain persons given that diagnosis. But confronted by the term *Shell-shock*, the ardent social worker or the ordinary man fails to get any incorrect notion about the nature, and especially about the prognosis, of the condition. If there is any suggestion of prognosis, it is the correct suggestion of curability possibly conveyed by the suddenness implied in the term shock; but I defy the ordinary man to get from the ordinary term *Shell-shock* very much that denotes anything in particular. All he gets is an enormous connotation. This connotation may run back for the race into tree stumps, savages brandishing spears, palatial decorations, the protrusion of animal spirits, the Leyden jar (sometimes familiarly known as the "shock bottle"), and the aspen shaking of the man in fear or its interior equivalent. But whether the slang runs back so far or no, and whether the shell is a shell of powder or a shell of fear, and whether the shock is of solid particles or in a moral sense, the problem is implicitly laid down in the slang.

In surrounding the neuropsychiatric problem, we shall not, however, be able to get on with symbols; we should do far better, no doubt, with cases. Even these, to-day, I am not able to give you in detail. Their collection and arrangement has proved that surrounding the *Shell-shock* problem means surrounding the problem of neuropsychiatry; means conceding that a particular so-called *Shell-shocker* might even very possibly be something quite apart from the field even of the functional neuroses, and sometimes quite far apart even from the organic neuroses and psychoses.

At this point, I can probably do no better than proceed with a consideration of the relations between so-called *Shell-shock* and the major groups or orders of mental disease. Those of you who have attended clinics at the Psychopathic Hospital recently, or have had time to dip into sundry writings of our staff, will be

familiar with the new ordering of old entities which we have adopted for the practical purposes of diagnosis. We have not propounded a new classification of mental diseases, for indeed, luckily, that is not necessary, such is the unanimity* of the psychiatric world at the present day over the majority of the major groups.²¹ I shall enumerate these. We think of mental diseases as: I, syphilitic; II, hypophrenic (that is, feeble-minded in some of its phases, including even slight degrees of subnormality not entitled to be called feeble-minded in the ordinary sense); III, epileptic; IV, alcoholic (or due perhaps to some drug or poison); V, encephalopathic (in the sense of some focal brain disease); VI, symptomatic (in the sense of some somatic disease); VII, senile (or presenile). The seven groups so far enumerated, I believe the general profession is pretty well equipped to consider, at least roughly to diagnosticate and to handle with due respect to the interests of the patient and of the community. I am bound to say that some of my colleagues would not go so far as to the competence of physicians in general in these fields, and one is aware that a plenty of mistakes have occurred even in these groups through the bad judgment of practitioners. Nevertheless, I hold to the conception that our profession is reasonably well equipped to handle these greater groups, having in mind all the while the appropriate temporary calling-in of the specialist. But there are two more groups, in addition to these seven, in which I am not so sure that the general profession knows as much as it should. I refer to VIII, the schizophrenic group, commonly known as the dementia præcox group; and IX, the cyclothymic group, sometimes termed the manic-depressive group. It is the victims of the diseases that constitute these latter groups that ought unconditionally to be excluded with few exceptions from the Army; and it is the study of these conditions which ought to be carried out as a part of every man's post-graduate training, not merely for his work on draft boards, but for his work in civilian practice. There is another group, X, psychoneuroses, with which the profession regards itself as familiar, and with which it doubtless is familiar, in

* That I assert such unanimity may astonish you, but I believe even the non-specialistic practitioner is decently familiar with the outlines of 80 per cent of our psychiatric problems — at all events, with eight out of ten of the major groups we have placed in a certain order in our practical key. There is an eleventh, ragbag group — the conditions which even the psychiatrist feels incompetent to deal with. These are a variety of psychopathias that, to be sure, appear somewhat even in the military service, but they do not bulk especially large in the problem of Shell-shock. Aside from this eleventh rag-bag group of psychopathias, we deal, as above said, with some ten groups, seven of which are sufficiently familiar in their major outlines not only to the general practitioner but to many specialists who are not psychiatric specialists.

what might be called *blooming examples* of hysteria, neurasthenia and psychasthenia. But the nub of the situation lies in the fact that the diagnosis of instances which are not such blooming examples is difficult, and hence it was that I qualified my statement as to the competence of the practitioner in this tenth group. It is, of course, the tenth group, of psychoneuroses, into which the majority of the Shell-shock cases fall.

Now a study of the literature of the belligerents having Shell-shock in mind as its special topic and aim proves to require a study of war literature in all of these groups. There are cases of so-called Shell-shock which even well-prepared medical men have placed in the neurosis group, when they should have been placed in one or other of the groups mentioned.

I shall now consider in turn some relations of Shell-shock to the several groups above mentioned.

SHELL-SHOCK AND SYPHILIS.

If the tempo of this war permitted, the race might turn a great trick. For one of the ways to surround the spirochete is to learn his every habit and plan of multiplying life. Aside from shell shock in its traumatic sense, the syphilis records of this war²² will, properly utilized, for years to come define the term of infection and set up mile-stones for tracing the post-infective history and at last the complete natural history of syphilis itself, and, in particular, of the most intriguing of all spirochete problems, that of neurosyphilis. As I have elsewhere said, hardly a more important problem faces the race than this problem of syphilis, and not the least of the sub-questions here is that of neurosyphilis.²³ But the solution of neurosyphilis problems, such as the incidence problem (to be solved by the post-bellum utilization of the Army and Navy records), will be vastly aided by Shell-shock. The Shell-shock records will contribute perhaps a little to the incidence problem of neurosyphilis, but enormously more to the problems of its course in time and of its spinal and cerebral placement. When the governmental and State authorities begin to note, a decade after the war, the to them unexpected augmentation in the number of tabetics and paretics, there will be ample time to search our military records,* to define and describe the curve of post-infective history followed by syphilis of the nervous system. But to-day we cannot honestly

* If, perchance, some bureaucratic obscurantist shall not have caused their destruction or — just as maleficently — their non-accessibility, through niggardly appropriations for research.

say we see the end of this war or the beginning of an armistice. All we can do is to pluck a brand from the burning. Now that brand from the burning syphilis question is precisely the Shell-shock variety of traumatic neurosyphilis. Little increments of knowledge have been trickling over from one civilian branch of medical *tychastics*,²⁴ viz., the growing science of industrial accidents; and the exact natural history of, say, traumatic paresis is being laid down by the eager sparring efforts of experts testifying before industrial accident boards. Before the war I had long been of the opinion, on the basis of the Boston Psychopathic Hospital's work for the Massachusetts Industrial Accident Board, that firms might well investigate the blood sera of those employees engaged in dangerous work, to the end that special insurance devices be adopted for syphilis-positives. By chance, I have here mentioned the employers first; but who can doubt that the community in general and the employees in particular would or should be grateful for the knowledge of the syphilis in their midst? Nor can I think of a more subtly effective educative measure than the general application of this preventive diagnostic device: who but must inquire into the reason and necessity of the measure and cut his jib thereby? Now the trickling stream of knowledge from industrial *tychastics* might readily swell into a considerable river of facts from the accident-lore of the war, if only, by the grudging permission of the Kaiser, there were time to do proper justice to the *tychastics* of the war. Trauma or no trauma, cerebral concussion or psychic shock, let all our workers study and record in this war the antecedents, prodromes, course, remissions, exacerbations, curability, signs, symptoms and conditions of the neurosyphilis of the war, particularly the Shell-shock variety. In that manner shall we spy out the chemical and physical ways, somatic and cerebrospinal, of syphilis — and in the process of stoning the Hohenzollern serpent scotch that other and more terrible autocrat of man, the spirochete. For while the Hohenzollerns must pass, it is not so sure about syphilis. We need another Cato the Elder to cry always, *Delenda est spirochæta!* Down with syphilis!

SHELL-SHOCK AND HYPOPHRENIA (FEEBLE-MINDEDNESS).

The possible relations of Shell-shock to feeble-mindedness are of some interest. We know that Shell-shock picks out certain nervous and mental weaklings and indeed that one author claims as high a percentage as 74 for war neuroses having a hereditary

or acquired neuropathic basis. How far does feeble-mindedness itself count among these supposedly susceptible nervous and mental weaklings? Is a feeble-minded person especially a condition for Shell-shock?

There are rumors of experiments to show that if in an aquarium containing some jelly fish alongside bony fishes, you explode a substance, the jelly fish ride through unscathed whereas the bony fishes are killed by the shock. The jelly fish presumably have too simple an organization to permit them to be killed by the shock of the explosion.

There is something to be said for the idea that in man also the higher and more complex specimens are more susceptible to Shell-shock, that is, to the neuroses of war, than are the lower and more simple combatants. Some statistics indicate that officers, who are in the main of a higher and more complex organization than the private soldiers, are much more susceptible than are private soldiers to the neuroses of war. Doubtless we shall not be able to verify these statistics until long after the war and, so far as I know, no very inclusive statistics have been presented.

On the whole, I judge from the case history literature⁶ that the feeble-minded, unless they be of that very high level sometimes called subnormal, are not particularly susceptible to the neuroses. It is obvious that idiots and for the most part, imbeciles, do not get into military service. As for what the English term the feeble-minded or what we in America are now terming morons, it may well be that our draft boards do not always exclude. High French authorities have specifically determined in certain instances that the high-grade feeble-minded would be perfectly suitable for certain branches of the service. There is the case, for example, of a sandwich man of Paris who somehow got into the French army and was being perpetually sent to look for the squad's umbrella and the key to the drill ground, but sang and swung his gun with joy as he went to the front, and apparently did very well there. This man had been a State ward, and, as you know, well-trained State wards are frequently exceedingly good at elementary forms of drill.

Then there is another case of an obvious imbecile who was quite without any idea of military rank and often got punished for treating his superiors like his comrades and was the butt of his section, but on the firing-line remained cool, careless of danger,—a magnificent example to his comrades,—at last was surrounded and taken prisoner. Here the story might have ended

and the folly of enlisting imbeciles in the army might have seemed perfectly plain, except that our imbecile forthwith escaped from the Germans, swam the Meuse and got back to his regiment!

Here, then, are cases in which the slight degree of hypophrenia — it seems unwise to give it the opprobrious title “feeble-mindedness” — would have been entirely inconsistent with the development of Shell-shock. Such men are, perhaps, too simple to develop neuroses. On the other hand, it would appear that certain of the slight degrees of hypophrenia, such as we might find in so-called subnormal or stupid persons, would prove capable of “catching Shell-shock” as it were, and then find themselves entirely incapable of rationalizing the situation. In short, there may be a group of psychic weaklings just complex enough to fall into the zone of potential neurotics, but just simple enough to render the processes of rationalization (or what one author terms *autognosis*) and of psychotherapy in general entirely unavailing.

After the war we may be confronted with a number of persons with their edges dulled by the war experiences. One has met even brave officers who, after months of furlough, still maintain that they will never get back to their normal will and initiative. Whether these hypoboulic persons have not been reduced to subnormality so as to resemble the slighter degrees of hypophrenia or feeble-mindedness can hardly be determined now. They will form important problems in mental reconstruction, for with the best will in the world the occupation-therapist, with all her technic, may be unable to force or coax the will of such hypoboulics into proper action. Nor will the ordinary environment of home and neighborhood turn the trick properly. Expert social work in adjustment, both of the returned soldier to his environment and of the environment to the returned soldier, may be necessary. I speak of this problem here not because these persons are hypophrenic or feeble-minded in the ordinary sense, but we must constantly bear in mind our experience in the teaching of hypophrenics (both in the schools for the feeble-minded and in the community) when we are facing problems of mental reconstruction.

Aside, too, from the mental edges dulled by war, we must think of persons who have been thrown into a state of what might be termed voluntary feeble-mindedness. A friend of mine has recently suggested that many Americans are in a state of what he

termed voluntary feeble-mindedness, never doing quite what was expected of them or quite what they could readily do. The observations upon which my friend based the suggestion were made, not here in Boston, but in the midst of New York, where psychic parasitism is possibly more frequent than with us here! However that may be, it will be important for us after the war to distinguish between the potentialities of the subnormals who have gone through the war with character not specially changed, the men who have been rendered somewhat inferior by their war experience, and the men who are in some sense voluntarily inadequate. Workers in sanatoria for tuberculosis have long assured us that their cured cases are sometimes hard to refit into the work of the community on account of the mental and bodily habits which their sanatorium life has dropped them into. Well, I am afraid that routine military life, aside from its occasional dramatic and heroic episodes, gives one a certain tendency, if not to somatic laziness, then in any event to psychic sloth. Let us therefore bear these principles in mind in our reconstruction efforts, taking as many leaves out of the book of hypophrenia as may be. Doubtless, we shall not have many cases of Shell-shock in the out-and-out sense of hysteria and complex neurasthenia in the feeble-minded of our Army, but we must still look for odd reactions on their part; and we must not look for too great skill in the process of γνῶθι σεαυτόν in these persons whose powers of self-analysis and of autocritique are at the outset limited.

SHELL-SHOCK AND EPILEPSY.

The authorities have been somewhat surprised by the number of epileptics which have gotten by the draft boards. The statistics are not yet ripe, but certainly the enlistment of an epileptic is not a rarity. There are some singular instances in the war literature showing how hard it sometimes is to bring out epilepsy. There is the English case, for example, of a man, an epileptic's son, who had himself been epileptic from eleven to eighteen, who entered the expeditionary force at the outbreak of hostilities, went through the retreat from Mons and through two years of active warfare without having a single epileptic convulsion. In fact, in September, 1916, he was put in charge of eight men on guard duty. Apparently the new responsibilities worried him, and two months later he had become epileptic to the extent of *petit mal*.

Another man who had never been epileptic (though his sisters

had been) was wounded four times, was never worried by shell fire, got somewhat depressed after the death of his father and five brothers in the service, but did not become epileptic until finally he was blown up and buried three times in one day, and it was a whole month later when he became epileptic, although treatment by rest and bromides apparently resolved the affair.

Other cases seem to show that war experiences can bring out epilepsy, although in most instances it would appear that there was an epileptic or otherwise neuropathic heredity in these cases.

There is one author, Ballard,²⁴ who has actually propounded a theory of Shell-shock as epileptic, pointing out the occurrence of epilepsy long after the early symptoms of Shell-shock have disappeared.* There does not appear to have been any increase in epileptics as the result of the war, either from the standpoint of Shell-shock or from the standpoint of brain injury, so far as the records of the National Hospital for the Paralyzed and Epileptic in London are able to show.

As in all other instances of mental or nervous disease, when an epileptic returns from the war, whether or no he was potentially or actually an epileptic before the war, his relatives are bound to term him a case of Shell-shock. I am familiar with a case in a hospital in a certain Atlantic port, a case of pronounced and obvious epilepsy. In the wards he is treated as the hero of every occasion. Not only the nurses and attendants, but the other patients and often the physicians can hardly resist thinking of him as somehow a case of Shell-shock. It is a comment upon the status of mental hygiene in general that this self-same epileptic, had there been no war, would have been, as it were, a common or garden epileptic, mute and inglorious on some sunny hillside.

In passing I may note how many instances in the medicolegal part of the war literature there are of epileptics who come up for court-martial or for medical examination pending court-martial. We may suspect that many a case of epileptic fugue has been regarded as a case of desertion. There is the case of an

* In one instance, fugue and other minor symptoms were later replaced by epilepsy; in another, an epileptic confusion developed eight months after an explosion, and in a third, a case of mine explosion, stammering resolved into mutism and mutism finally to epilepsy. Of course there is a so-called general resemblance among all forms of hyperkinesis or irritative discharge of the nervous system. If we term epileptic all the things that various authors have termed epileptoid, we may be doing nothing more than to say that we believed these cases all subject to epileptic hyperkinesis. In that direction, of course, it has long been said that dipsomania was really a form of epilepsy. Whether Shell-shock is ordinarily subject to recurrence in such wise as to imitate the recurrence of attacks of dipsomania, of manic-depressive psychosis or of epilepsy is, to say the least, doubtful at this time.

epileptic who left camp one morning and got drunk. Investigation showed that he left camp before anything epileptoid had happened. He developed in his drunkenness a pretty clearly epileptic crisis with great violence, for which he had a complete loss of memory. The French Council condemned him to five years of labor, not admitting in this instance that responsibility was diminished by reason of the man's being epileptic. In short, from the military point of view, he should, so to say, have known enough not to have got drunk, and so have avoided getting his epileptic crisis. Of course the decision was here very close, and a like decision would not always be rendered. To add to the complication of this particular case, the very first epileptoid crisis which caused it to be known that the man fell into the epileptic group was due to Shell-shock, or at least developed immediately after the bursting of a shell near by. On the whole, however, the relation between epilepsy and Shell-shock is not a close one.

SHELL-SHOCK AND ALCOHOLISM.

A good deal of prime interest surrounding alcoholism has been developed in the war; but on the whole, so far as I can determine from the war case literature, there is little or no direct relation between alcoholism and Shell-shock, despite the fact that in a number of instances alcohol has complicated the issue and very possibly helped in a general demoralization of the victim. However, the alcoholic amnesias and particularly a few instances of the so-called pathological intoxication have exhibited a certain medicolegal interest, recalling what was just said above about the responsibility of a drunken epileptic. Alcohol remains, I should say, pending exact monographic work upon this topic, purely a contributory factor for the war neuroses.

SHELL-SHOCK AND FOCAL BRAIN DISEASE.

In the orderly diagnosis of mental disease, from the standpoint of the major orders or groups, we ordinarily come at this point to the focal brain diseases. In analyzing the neuro-psychiatric problem of a so-called Shell-shocker, it is, of course, our bounden duty to exclude syphilis. Even though the percentage of syphilitic victims of Shell-shock is not high, yet these cases promise so much from treatment that they deserve to get their diagnosis as early as possible, and the English workers who have worked most in the syphilitic field insist upon this point.

We next proceed, as above indicated, to the elimination of

hypophrenia with all the various grades of feeble-mindedness. Thirdly, we try to exclude the various forms of epilepsy; and fourthly, the effects of alcohol, drugs and poisons.

In ordinary civilian practice, such as that at the Psychopathic Hospital, the orderly elimination for diagnostic purposes of the great groups of the syphilitic, hypophrenic (feeble-minded), epileptic and alcoholic leaves us with cases in which there either is or is not important evidence of organic nervous-system disease, such as that shown in cases with heightened intracranial pressure or in cases with asymmetry of reflexes and other forms of para-reflexia. In military practice these logical questions of prior elimination of syphilis, feeble-mindedness, epilepsy and alcoholism must go a-glimmering at first, unless their signs are so obvious as to permit diagnosis by inspection. But the nervous and mental cases almost one and all give rise to *the suspicion* at least of *organic disease*, possibly traumatic in origin. Even when a man falls to the ground without a scratch upon his skin, there is some question whether in his fall he has not sustained some slight intracranial hemorrhage which the lumbar puncture fluid might show. Add to this that the signs of hysteria are very often unilateral, and it will readily be conceived how much like an organic case an hysteric in the casualty clearing station may look. Rapid decision may be necessary in order to get immediate effects in psychotherapy a few minutes or hours after the shell explosion, and one may need to choose between applying a possibly unsuccessful psychotherapy forthwith and making a thorough neurological examination. As Babinski has pointed out, making a thorough neurological examination gives opportunity for all sorts of medical suggestion to be conveyed to the patient. It would appear that many an hysterical anesthesia has been given to a patient by the very suggestion of the physician testing sensation. Here one does not refer to malingering in the conscious and designed sense of the term, but to the operation of the genuinely psychopathic, that is to say, hysterical processes.

In the case of head injury, naturally the majority of nerve phenomena will ordinarily be upon the opposite side of the body to the side of the head that is injured. The reverse situation holds for hysterical cases, wherein it would appear that the bursting of a shell, let us say upon the left side of the body, seems to determine contractures, paralyses and anesthetics to that same left side of the body; now and then complicated cases appear which put the neurologist through his best paces. Such a case is that of a man who was wounded on the left side of the head and

promptly developed a *hemiplegia* on the same (*left*) side, *with aphasia*. Now aphasia ought to be the result of a lesion on the left side of the brain in the common run of cases, whereas left-sided hemiplegia ought to be the result of lesion on the right side of the brain. In point of fact, the analyst of this case felt that he was dealing with a direct injury on the left side of the brain, leading to aphasia, and a lesion by *contrecoup* on the right side of the brain, leading to a left-sided hemiplegia.

It is not only at the casualty clearing stations and along the lines of communication that the difficulties in telling Shell-shock in the neurotic sense from traumatic psychosis and the effects of focal brain lesions is found, since the literature amply shows that diagnostic problems remain open for weeks or months in the various institutions of the interior, to which all the belligerents have been forced to send their cases.

A glance at the differential tables that have been developed, for example, by the French neurologists, will show how fine the diagnosis betwixt a hysterical and an organic disease may be, especially when we consider how often there are admixtures of the two. The rule holds for the vast majority of cases that absolute bullet wounds or shrapnel wounds do not produce Shell-shock; and the statistical story is so clear that one might almost think of the wounds as in some sense protective against shock, that is, against Shell-shock, not against traumatic or surgical shock. Nevertheless, by some process whose nature is obscure, the hysteric is apt to pick up some slight wound, and, as it were, surround this wound with hysterical anesthesia, hyperesthesia, paralysis or contractures.

The chances are, if we should collect all our civilian cases of railway spine and of industrial accident with traumatic neuroses, we should be able to prove this same strange relation between a slight wound in a particular part of the body and the local determination of hysterical symptoms to that region. Of course, the determination follows no known laws of nerve distribution to skin or muscles, and the effect is apparently a psychopathic or, at all events, a dynamic process without clear relations to the accepted landmarks.

I do not mean to suggest, aside from the hurry of war, that the differential diagnoses here are more difficult than those in civilian practice, but the difficulties are at least as great as those that have faced the civilian practitioner. What needs emphasis is that just because we have concluded that the statistical ma-

majority of the cases of so-called Shell-shock belongs in the division of the neuroses, we should *not feel too cocksure that* a given case of *alleged Shell-shock* appearing in the war zone or behind it *is necessarily* a case of *neurosis*.

After the early "period of election" for psychotherapy in the war zone has passed, there can be no excuse except general war conditions for not according to every case of alleged Shell-shock a complete neuropsychiatric examination, having due regard to the ideas of Babinski concerning medical suggestion of new increments and appendices to the original hysteria, developed in battle or shortly thereafter.

I have, however, been able to find in the literature good instances of puzzling diagnoses in which such conditions are in evidence as acute meningitis of various forms, hydrophobia, tetanus, and the like.

Especially in the diagnosis against Shell-shock hysterias we may need to think of the abnormal forms of tetanus, to which an entire book in the "Collection Horizon" has been devoted. The differential diagnostic tables here draw up distinctions between local tetanus, involving, let us say, the contracture of one arm, as against a hysterical monoplegia.

SHELL-SHOCK AND BODILY DISEASE.

In civilian psychopathic hospital practice, if a case is not syphilitic, not feeble-minded, not epileptic, not alcoholic, and without signs of intracranial pressure or disorder of reflexes, then we as specialists must consider whether the disease in question is not due to some form of bodily disorder outside the nervous system. For example, we think in practice of infectious psychoses, of exhaustive states, such as the puerperium, of toxic states, such as may be found in cardiorenal cases, and of glandular phenomena, such as we are familiar with in the thyroid disorders.

Under the war conditions it might be thought that these somatic disorders yielding the so-called symptomatic mental diseases would be frequently found.

Aside from these rarities in puzzling diagnosis, we find more commonly in the literature evidence of the soldier's heart, the so-called "D. A. H.," or disordered action of the heart, of the English army reports. This soldier's heart is sometimes associated with hyperthyroidism, and sometimes hyperthyroidism is found alone, with symptoms suggesting those of a sort of diffuse Shell-shock.

One author claims rapid cures of hyperthyroidism by the relatively simple process of hypnosis. Perhaps this is not too unlikely in view of the still obscure relations between mind and hormones. A little more surprising, perhaps, is the assertion met with that psoriasis is sometimes a Shell-shock phenomenon.

The literature clearly shows, however, that, as in most special problems, the internist is still in demand. I will recall to you again how one internist was misled on the stand into stating that he was a "general specialist." This is what we would all need to be, were we to solve the problems of Shell-shock in the time allotted to us by the war.

SHELL-SHOCK AND OLD AGE.

For completeness' sake, I mention here the old-age diseases which the specialist in psychiatry has to consider after he has eliminated the diseases of brain and body, that the neurologist and internist cover.

The relation of old age to Shell-shock is just now a distant one. Are the Shell-shockers, especially the mild instances of men coming back with their so-called "nerves," with their dulled emotional edge or their equally abnormal over-sensitivity, ever going to get over these states and pass into normal activities once more? Are their lives to be shortened through their experiences? We who see the Grand Army veterans parading are apt to comment on their fine figures and the immense powers of resistance they must have shown. They were in a sense picked men both in war time and since that time. What now shall be said concerning the more serious experiences of the present war? Are we producing a group of potential neurotics, liable to be thrown into hysteria, neurasthenia or psychasthenia by the accidents and adventures of post-bellum life, or are these men ever to get back to so normal a terrace that they can be regarded as even potential neurotics? Will they not all of them lose what the physicist calls positional energy, and remain a terrace lower, neuropotentially speaking, than normal men?

I get the impression from some returned soldiers that they believe themselves forever somewhat broken men, but I am inclined to think that the psychology and physiology of their convalescence have not been sufficiently worked out to allow us to agree with them forthwith. For the present we should concede to Nature her *vis medicatrix* and consider that in a period of not over two years after the war experience is over these men should

get back to their normal emotionality and their normal equipment of will and character. But I am bound to say that this conclusion depends more upon hope than upon proofs, and at best hangs upon the suggestions from convalescents that we obtained in the acute diseases of civilian life, which very possibly bear no sort of relation to the war effects. What these war effects in general really are is doubtful. There seems to be no particular augmentation in cases of mental diseases of the physical exhaustion type.

We are, as a rule, able, it would appear, to assign the exhaustive psychoses that do occasionally appear to other and more specific causes than the fatigue and strain of the war. Now and then a case is reported as prematurely old-looking; but, on the whole, there is no special evidence that life is to be, in general, shortened, or in later years made at all more difficult by the war experience unless there has been some specific disorder leading to incapacity in the war.

SHELL-SHOCK AND SCHIZOPHRENIA (DEMENTIA PRÆCOX).

That the causes of dementia præcox, still unknown as they are, lodge more in the interior of the body or in special individual reactions of the victim's mind, seems to be shown by the phenomena of this war, since there seems to be no great number of dementia præcox cases therein produced. To be sure, some schizophrenic subjects do get into the service, and sometimes their delusions and hallucinations get their content and coloring from the war. Thus a Russian, wounded in the army, developed delusions concerning currents running from his arm to the German lines and felt that he was, so to say, the Jonah of the Russian front, as he could determine shell fire to the spot where he was through the unfortunate currents from his arm.

Now and then a case shows a scientifically beautiful admixture of ordinary dementia præcox phenomena with the effects of shell wound or shock. A picturesque case from the standpoint of German psychiatric diagnosis is one of a soldier who boxed the ear of a kindly Sister who tried to steer him from a room where the examination of another patient, a woman, was going on. On the whole, the eminent German psychiatrist who examined the case felt that he was really one of psychopathic constitution, as he had shown somewhat similar irascibility on a slight occasion before. However, much to the astonishment of all, the patient developed further symptoms. His ego got terribly swollen. At

last he was fain to utter a denunciation of the entire *Junkertum* and of the Kaiser: he said in fact that he was an inhabitant of the world and not of Prussia merely. Over here we allow such persons to edit newspapers and write books with impunity, but the eminent German psychiatrist, before mentioned, was constrained to alter his diagnosis of this cosmopolite from psychopathic constitution to dementia præcox!

SHELL-SHOCK AND CYCLOTHYMIA.

On account of the somewhat close resemblance between the phenomenon of manic-depressive psychosis and what we ordinarily feel ourselves — a logical situation reflecting merely the fact that the phenomena of over-activity (mania) and of under-activity (depression) are merely quantitative variations from the normal — it might be supposed that the war life and its shock and strain would start up the cyclothymias in some numbers. Why should not a shell explosion start up a mania or throw a man into a depression? In point of fact the literature somehow does not agree with this presupposition.

Some years ago in Massachusetts a brief investigation was made of the assigned causes of the successive attacks in a great number of cyclothymic (manic-depressive) cases, and it was found that each successive attack progressively had less of the physical in the previous history. Something like 45 per cent of all the first attacks had a pretty obvious cause in the soma, such as a kidney disease, a heart disease, a puerperal condition and the like, but the second attacks failed to show even 20 per cent of such obvious somatic causes, and the third attacks even less than 10 per cent, and so on.

Now war conditions and even the shell explosions themselves have apparently not set up any such conditions as those of mania or of depression. Most of the instances of cyclothymia are instances of men who are cyclothymic before they enter the Army. These experiences, when after the war we can sift them all out, may allow us to form better ideas as to the etiology of many of the psychoses, and the great war may thus prove a gigantic experimental reagent which will aid in solving some of the major problems of mental hygiene.

I have pictured the practical situation in which the neuroses of the war find themselves — a situation bristling with diagnostic difficulties. The great proposition deducible therefrom is, *the diagnostic problem in Shell-shock is the diagnostic problem of neuropsychiatry at large.*

The neuroses of war have this in common with the neuroses of peace, — that they need to be distinguished from all other nervous and mental diseases. One cannot be a specialist in Shell-shock unless one is a neuropsychiatric specialist; even the neuropsychiatrist has much to learn from the internist, the orthopedist, the neurosurgeon, as well as from the psychologist.

But, however wide the diagnostic field for Shell-shock, the therapeutic field is wider still. For the neuropsychiatric reconstructionist has to face the peculiarities of the military status of his ward, the difficulties of demobilization into civilian life (a canal system with very precise technic for the opening and closing of locks), the choice and timing of the proper measures of bedside occupation, of occupation-therapy in a broader sense, of prevocational and vocational training, — the whole complicated by the character changes that may have set in to bowl over all one's preconceptions. The nub of the matter, after the era of the *manière forte*, the brusque psychotherapy, the rough jarring of the man back into approximate normality is, perhaps, this possibility of subtle character changes defying possibly anybody's analysis, but stimulating us all to our best endeavor, whether we are physicians, psychologists, occupation-workers, social workers or nurses. Now that all sorts of reconstruction programs are in the air, each claiming its share, or more than its share, of attention, let us not forget that no one can stake out in any small plot the measures of refitting, readjustment, readaptation, rehabilitation — all these terms with slightly differing denotation have been used — especially when we take into account that not only must the patient be refitted to his entourage, but also not seldom the entourage to its returned Shell-shocker.

It is proper to place these general considerations first because the slow, patient, prosaic measures of re-education are apt to be forgotten in our enthusiasm for the lightning-like cures of the hypnotic, the psycho-electric, the pseudo-operative, and other psychotherapeutic forms. Psychotherapy in all its forms has come into its own in Shell-shock. Miracles or their equivalents are daily wrought by men who are not prophets. Lourdes and Christian Science have their unassuming rivals. Let us remember, however, that even Lourdes and Christian Science never solved 100 per cent of the problems placed before them, even though the votaries have the best will in the world to be cured. If the will itself is disordered, what can be done save investigate? And the *mauvaise volonté* is by no means absent from some of our prospective patients; witness one man, a Frenchman, who so re-

sented being cured by *torpillage*, i.e., by the electric brush, that he carried his case against Clovis Vincent, who cured him of his hysteria, clear to the Academy! And, even after we have cured our cases by these modern miracles, let us not be too proud of ourselves! One soldier sent back to Australia, hysterically mute for months, got his voice back after killing a snake — a peculiar instance of occupation-therapy, not enumerated in courses on reconstruction. And remember the man who jumped the wall and got drunk, breaking back into the hospital to show his doctor how his refractory voice had at last come back. Thus there are cures and cures (even a newspaper cure of mutism by a moving-picture vision of the antics of Charlie Chaplin), and spontaneous non-medical cures as well as medical ones, and slow cures due to *vis medicatrix*, as well as to shrewd re-education measures.

Taken by and large, what problem has more threads to more sciences and arts than has Shell-shock? The very name itself has within it a good deal of the essence of mob-psychology: in another age we should have had the same mob fear of it that now invests such things as insanity, syphilis, cancer, leprosy. But a speedy application of the principles of neurological art, the legacy of Charcot, has nipped that particular mob fear in the bud. Yet the magic of the slang term itself, with all its imbedded pomp and circumstance of the war, making Shell-shock a veritable microcosm of the great war, symbolically speaking, has us all under its spell, whether laymen, physicians or philosophers. Does one sometimes die of Shell-shock, just because the cells of the vago-accessorius nucleus lose a little of their substance, as Mott relates? Very well, where does this carry one except into the deepest recesses of physical chemistry, into what Peirce, years ago, particularly termed the liquefaction of the life-slime or protoplasm? At this point the structural fades into the functional, or the functional into the structural, it matters not which. Take Shell-shock from the farthest outside, as mob-psychology, or from the farthest inside, as a problem of kinetic energy, there is little but maximal interest anywhere. I had the curiosity to draw up a list of the specialistic types of worker whom I personally knew to be engrossed in some aspect of this problem; there were no less than twenty-five. I forbear to list them here.

Where does this problem systematically belong? Medicine claims it by a certain right of priority in its diagnosis and a good share in its successful treatment. But in another sense medicine

has but a slender claim to the wealth of its content. Babinski by means of it seems to have split the dynamic into two parts. As to the high psychic functions, we had thought of them as split in hysteria, in dissociation of personality. And we had roughly distinguished these conditions as *psychopathic* from conditions we called *neuropathic*, regarding the latter neuropathic disorders as on the model of the effects of cutting off or destroying certain necessary neurones. However clear or unclear we were as to the nature of the neuropathic, it does not here matter. Babinski's point is that there is another kind of dynamic disease that operates, not after the manner of hysteria, but after a manner reminding one of the forgotten "reflex" disorders of Charcot — disorders that fitted the textbooks so poorly that the textbooks dropped them out. In short, what you might call *the dynamopathic or functional in nervous disease has been shown to fall into two parts* — a *psychopathic* fraction and a non-psychopathic fraction. Babinski calls this non-psychopathic fraction *physiopathic* or reflex. And these reflex or physiopathic disorders have a different order of curability than have the hysterical or psychopathic disorders. By what simple device did Babinski prove this? By chloroforming the patient. Under chloroform, when all the other reflexes were stilled, Babinski could bring out, in relief as it were, certain reflexes, or even hypertonus, that were in the waking life wholly concealed, — yet at the same time consciousness, in the usual sense of that term, had vanished. Accordingly, the proof of a new type of functional disease, at times concealed by the overlay of higher neurones, was now plain. Does not this offer new leads of the greatest value in that most intricate of fields, psychopathology? Is not the model here offered of diseased *nervous functions, non-psychic* in nature (in the ordinary sense of psychic) *but of almost equally complex nature*? I confess that, to me at least, the world seemed potentially a great deal richer when this suggestion of the physiopathic — *i.e.*, non-psychopathic and non-neuropathic (in the sense of neuron loss) — came across the Atlantic. Another little nick in that frozen block we have been trying so long to exorcise, *viz.*, that indefinable Archeus, Incubus or Succubus (words fail here), the so-called Unconscious!

Life and, for that matter, the world itself is, according to one account, nothing but a chapter of accidents. Of these, Shell-shock is not the least terrible. Thank Heaven, a little light on life and mind and their laws can be thrown by this fortuity, for

which the Kaiser and his like be cursed into eternity, unless they themselves are in some sense gigantic errors of an irresponsible fate. God help us to make it so that they and their ruins shall not be the last in the chapter.

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THE CIRCULATION OF ARSENIC IN THE CEREBRO-SPINAL FLUID.*

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The infrequency with which arsenic has been found in the cerebrospinal fluid, following the intravenous injection of arsphenamin, forces the conclusion that this dye does not, as a rule, pass from the blood into the cerebrospinal spaces. Barbat¹ believes that the transition is aided by drainage of the lumbar cistern shortly after the injection. By this technic, he was able at the end of twenty-four hours to demonstrate 0.25 part of arsenic per million in twenty-three fluids of twenty-six examined. His deduction, however, is vitiated by the fact that, as early as twenty minutes after the intravenous injection, and unaided by the auxiliary puncture, 42 per cent of the fluids examined showed 0.20 part of arsenic per million, which is practically as much as was found in twenty-four hours.

The results reported in Table 1 are based on an examination of 123 cerebrospinal fluids collected from random neurosyphilitic patients, at arbitrary intervals following the intravenous injection of from 0.3 to 0.6 gram of arsphenamin. The analytic method used is a refinement of the Marsh technic and permits the quantitative recognition of a micromilligram of arsenous oxid, as a characteristic mirror. The attempt was made to exclude possible sources of contamination in the collection of the fluids. Controls were run with the fluids of patients, not under active treatment, and each determination was preceded by one or more blanks.

* From the psychopathic department, Boston State Hospital.

TABLE 1. — *Results of Examination of Spinal Fluid.*

| INTERVAL AFTER INJECTION. | Samples Analyzed. | Positive. | Negative. | Average M _g . Arsenous Oxid in 1 c.c. |
|---------------------------|-------------------|-----------|-----------|--|
| 5 minutes, | 2 | — | 2 | 0.00 |
| 20 minutes, | 1 | — | 1 | 0.00 |
| 30 minutes, | 6 | 1 | 5 | 0.10 |
| 45 minutes, | 3 | — | 3 | 0.00 |
| 1 hour, | 29 | 19 | 10 | 0.18 |
| 1½ hours, | 23 | 4 | 19 | 0.18 |
| 2 hours, | 35 | 15 | 20 | 0.17 |
| 3 hours, | 7 | — | 7 | 0.00 |
| 5 hours, | 2 | — | 2 | 0.00 |
| 6 hours, | 3 | — | 3 | 0.00 |
| 7 hours, | 4 | — | 4 | 0.00 |
| 23 hours, | 8 | — | 8 | 0.00 |

It is thus seen that of 123 fluids the arsenic contents of 39 became appreciable within one or two hours. Whether the fluids found negative were so because their arsenic contents at the time of collection had not reached the limit of delicacy of the analytic method or because they had already depreciated therefrom cannot be stated. Also, because of the few samples collected at intervals beyond two hours, it cannot be concluded from these data that no arsphenamin passes into the cerebrospinal fluid after the second hour or that it does not remain there in appreciable amounts for periods longer than one hour.

The recent work of McClendon² suggests that the cerebrospinal fluid is an ultrafiltrate of the blood. Its arsphenamin concentration at the place it is formed must then progressively decrease with that of the blood. Adler and Wetmore,³ using the same analytic method as did the present authors, found that at the end of one hour, following the intravenous injection of 0.6 grams, 80 per cent of the drug had disappeared from the blood stream. In three hours 98 per cent had gone, and the concentration of arsenous oxid was only from 0.25 to 0.50 milligram per cubic centimeter. It seems probable, therefore, that the arsphenamin concentration of the cerebrospinal fluid attains its maximum during the first hour. This probability is strengthened by consideration of what happens when arsphenamin is intrathecally

introduced by the Swift-Ellis technic. Twelve cubic centimeters of blood serum drawn one hour after the intravenous injection of arsphenamin, and fortified by the addition of 0.3 milligram, represents about 150 milligrams of arsenous oxid. Two hours after its introduction, the fluids of three patients examined showed less than 0.05 milligram of arsenous oxid per cubic centimeter. By the latter technic, therefore, a maximal concentration of 1.2 milligrams of arsenous oxid per cubic centimeter of cerebrospinal fluid may be obtained and maintained for a period certainly not over two hours.

It is now fairly definitely established⁴ that the cerebrospinal fluid filters through the arachnoid villi into the greater sinuses, and the absorption from the cranial subarachnoid space is held to be much more rapid and greater in amount than from the spinal portion. Also, there is said to be an accessory drainage of the fluid by way of the perineural lymphatics. Cushing and Weed⁴ report the excretion within two hours of from 19 to 25 per cent of the phenolsulphonephthalein placed in the lumbar subarachnoid space of cats. Mehrtens and West⁵ state that the same substance under similar conditions appears in the urine of normal human subjects in less than ten minutes. In neurosyphilis the period is lengthened as much as seventy minutes. How long the excretion can be demonstrated or what becomes of the major part of the substance was not determined.

It might be questioned whether the minute amounts of arsphenamin that find their way into the cerebrospinal fluid have any spirillicidal value. Knowing what we do about its rapid excretion, it is probable that 0.6 gram of the dye given intravenously cannot, when dispersed through the tissue juices of a 70 kilogram (154-pound) man, represent a higher concentration of arsenous oxid per cubic centimeter than is found in the cerebrospinal fluid; and its efficacy in systemic syphilis has never been questioned. Its failure to attain a spirillicidal concentration may be manifested by such phenomena as neurorecurrences, the Herxheimer and other reactions, corresponding to the biologic law that small quantities of a poison excite, large ones, kill the micro-organism.

The best histologic and physiologic evidence⁴ represents the cerebrospinal fluid as "not only the secretion of the choroid plexus, but the fluid waste products of nerve-cell activity as well, poured into the subarachnoid spaces by way of the perivascular channels." Spina⁶ has shown that the amounts yielded by the lymph spaces may be considerable. Hence it cannot be said

that any amount of arsphenamin placed in the cisterns is therapeutically the equivalent of the minute amounts excreted into the cerebrospinal spaces from the capillary bed. The rate of filtration of the fluid through the arachnoid villi is a function of the pressure difference between the cerebrospinal fluid and the venous blood. To reduce the pressure of the former by withdrawal of a maximal amount of fluid at lumbar puncture, as practiced by Barbat,¹ may indeed have the effect of suspending the outflow for a certain period and thus conserve the arsphenamin concentration of the fluid. The therapeutic advantage to be so gained is problematic, since it is in the perivascular and perineural spaces that occur the chief inflammatory changes characteristic of neurosyphilis, and it is doubtful whether the various cisterns are in direct communication with the former.

It has been urged in favor of intrathecal therapy that the serum introduces the antitoxin, which, after all, constitutes the effective curative agent. Sherrington⁷ has shown that following intravenous injections of antitetanic serum into monkeys, the cerebrospinal fluid acquires antitoxic properties. In effecting cures of acute tetanus, the intrathecal administration of the antitoxic serum was shown to be more efficient than the intravenous. Golla⁸ denies that the relation holds for man, and cites Irons, who treated sixteen unselected acute cases by the lumbar method with a mortality of from 81 to 83 per cent, and eleven similar cases by the intravenous route, with a mortality of 72 per cent. In a chronic granulomatous disease like syphilis, conditions are much different. Taking the Wassermann reaction as an index, the antitoxic molecule is frequently, in the later stages of neurosyphilis, to be found in the cerebrospinal fluid, while absent in the blood serum. The autochthonous formation of antitoxin, indeed, becomes a necessity, if we are to regard it as the reaction of the host against the constituent contents of the invading organism, *e.g.*, its toxin, and in neurosyphilis the perivascular spaces are the chief seats of the spirochetosis, and hence also the chief seat of antitoxin formation. There is strong indirect evidence that the antitoxin molecule represents nothing more than the molecule of some everyday constituent of the blood (and to a lesser extent of the cerebrospinal fluid) that has acquired an exalted absorptive capacity. The Wassermann reaction would, then, represent a physical competition between the absorptive capacities of two molecules for complement, resembling the competition between two acids of different avidity for base. As will be brought out by one of us (Rieger) in a separate paper, this

TABLE 2. — *Findings in Patients on whom Two or More Arsenic Determinations were made.*

| CASE NO., NAME,
AGE, SEX, RACE. | Diagnosis. | Date. | Interval
after
Injection. | Arsenous
Oxid, Mmg.
in 1 c.c. | Protein. | Cells. | Colloidal
Gold Test. | WASSERMANN
Test. | | Treatment — Number
of Injections. |
|--|------------------|----------|--|-------------------------------------|----------|--------|-------------------------|---------------------|--------|--|
| | | | | | | | | Fluid. | Serum. | |
| 6134, F. B., aged 46,
male, white. | General paresis, | 1/25/16 | - | - | ++ | 90 | 55555553000 | 55555 | + | Arsphenamin, 38 intravenous;
7 intracranial, 2 intraspinal;
mercury salt, 14 intramuscular,
1 intracranial. |
| | | 11/24/16 | 1 hr. | 0.50 (spine) | ++ | 0 | 55433210000 | 55555 | ? | |
| | | 11/24/16 | 1 hr. | 0.60 (vent.) | n | 2 | 55433210000 | -0-0- | - | |
| | | 12/9/16 | 2 hrs. | 0.00 (spine) | ++ | 0 | 01222200000 | - | + | |
| | | 12/9/16 | 2 hrs. | 0.00 (vent.) | n | 0 | 42100000000 | - | + | |
| | | 4/14/17 | 2 hrs. | 0.00 | n | 1 | 01123300000 | - | + | |
| 9126, B. V. C., aged 47,
male, white. | General paresis, | 2/20/18 | - | - | n | 4 | 11211000000 | - | - | Arsphenamin, 36 intravenous;
4 intracranial; mercury salt, 2
intramuscular. |
| | | 11/11/16 | 2 hrs. | 0.30 | ++ | 18 | 55555431000 | 55555 | + | |
| | | 11/15/16 | 2 hrs. | 0.20 | ++ | 3 | 55553310000 | 55554 | + | |
| | | 11/18/16 | 2 hrs. | Trace | ++ | 8 | 44443110000 | 50555 | + | |
| | | 2/17/17 | - | - | + | 3 | 11111000000 | 5351- | - | |
| | | 2/16/18 | - | - | n | 4 | 00121100000 | 55411 | - | |
| 6783, J. V. H., aged 40,
male, white. | General paresis, | 5/27/16 | - | - | ++ | 7 | 55555555200 | 55555 | - | Arsphenamin, 31 intravenous;
2 intracranial; mercury salt, 10
intramuscular. |
| | | 9/14/16 | 1 hr. | 0.30 | ++ | 2 | 55555400000 | 55555 | - | |
| | | 9/19/16 | 1 hr. | 0.20 | ++ | 2 | 55555442000 | 55555 | - | |
| | | 10/5/16 | 1 hr. | 0.07 | ++ | 4 | 55554420000 | 55555 | + | |
| | | 11/2/16 | - | - | ++ | 14 | 55544321000 | 55555 | - | |
| | | 11/2/16 | - | - | ++ | 141 | 00000000000 | 5541- | + | |
| 7631, F. B., aged 19,
female, white. | Neurosypilis, | 11/12/16 | 2 hrs. | 0.55 | + | 21 | 00122100000 | 51- | + | Arsphenamin, 18 intravenous;
mercury salt, 2 intramuscular. |
| | | 11/18/16 | 2 hrs. | 0.30 | + | 6 | 00000000000 | - | + | |
| | | 2/17/17 | - | - | n | - | - | - | + | |
| | | 7/29/16 | - | - | + | 35 | 00000000000 | 55- | + | |
| | | 8/23/16 | 30 min. | 0.10 | ++ | 5 | 00000000000 | 5500- | + | |
| | | 8/30/16 | 1 hr. | Trace | n | 3 | 00000000000 | ? | + | |
| 7150, R. B., aged 27,
male, white. | Neurosypilis, | 9/14/16 | 1 hr. | 0.30 | + | 9 | 00000000000 | - | + | Arsphenamin, 13 intravenous;
mercury salt, 4 intramuscular. |
| | | 10/28/16 | - | - | - | - | - | - | + | |
| | | 12/29/15 | - | - | + | 112 | 55555530000 | 5555- | + | |
| | | 6/7/16 | 1 hr. | 0.20 | ++ | 0 | 55555210000 | 554- | + | |
| | | 8/12/16 | 1 hr. | 0.10 | ++ | 0 | 33333210000 | - | - | |
| | | 10/19/16 | 2 hrs. | - | ++ | 20 | 55554332000 | 55554 | + | |
| 5991, J. M., aged 57,
male, black. | General paresis, | 10/28/16 | 2 hrs. | 0.10 | ++ | 39 | 55553310000 | 55555 | + | Arsphenamin, 17 intravenous;
5 intraspinal, 1 intracranial;
mercury salt, 2 intramuscular;
1 intraspinal; sodium nuclein-
ate, 13 intravenous. |
| | | 11/15/16 | 2 hrs. | 0.07 | ++ | 1 | 55554331000 | 55555 | + | |
| | | 11/18/16 | 2 hrs. | 0.10 | ++ | 1 | 55554432000 | 55554 | + | |
| | | 11/29/16 | 2 hrs. | 0.10 | ++ | 2 | 55554331000 | 55554 | + | |
| | | 12/1/16 | 2 hrs. | 0.14 | ++ | 12 | 55552100000 | 55554 | + | |
| | | 12/7/16 | 1 1/2, 2, 2,
3, 1, 1 1/2,
1 1/2, 1 1/2,
23 hrs. | - | ++ | 9 | 55544211000 | 55555 | - | |
| 7553, M. G., aged 33,
male, white. | General paresis, | 3/7/17 | - | 0.00 | n | 4 | 54444000000 | 00-0- | ? | |
| | | 7/12/17 | - | - | - | - | 00000000000* | 55- | - | |

increase in absorptive capacity of the normal molecule, x , sufficient to deviate complement from the hemolytic molecule, y of rabbit's serum, may often be brought about in a simple way both in vitro and in vivo. The injection of arsphenamin, *per se*, can often accomplish this, so that after repeated injections a previously negative blood serum becomes positive, without the mediation of spirochetes.

The intensive treatment of neurosyphilis in all stages, by the intravenous injection of arsphenamin, has, in the hands of one of us (Solomon) thus far given the most satisfactory results. The latter will be presented separately. The cases in Table 2 were taken at random and simply represent those on whose fluids two or more arsenic determinations had been made. It will be noted that the fluids in general show progressively smaller amounts of arsenic for the same time interval, with successive injections. This increased rapidity of elimination corresponds with the increased tolerance for arsphenamin shown by most patients. Adler and Wetmore, working with blood, similarly report that — "increased tolerance to salvarsan seems to run parallel to increased rapidity of excretion." This circumstance may form the basis for the belief that the spirilla become "arsenic fast" under intensive treatment. It will be also seen that those patients consistently showing the larger amounts of arsenic in their fluids made the more rapid progress, as judged from the serologic findings.

What, then, is emphasized by the foregoing is the necessity of maintaining a maximal concentration of arsphenamin in the blood for longer periods than has heretofore been the practice, so that increasingly greater amounts will pass into the perivascular spaces. The pleocytosis, increase in protein and in the positivity of the Wassermann reaction in the midst of apparently intensive treatment can only mean that the arsphenamin has failed to reach the seat of the spirochetosis in lethal concentration, and has stimulated rather than checked the process. It is hoped to meet the condition set forth by successive intravenous injections at one or two hour intervals of small doses, perhaps supported by multiple intramuscular injections.

SUMMARY.

1. Of 123 cerebrospinal fluids collected at intervals ranging from five minutes to twenty-three hours after intravenous injection of from 0.3 to 0.6 gram of arsphenamin, thirty-eight showed appreciable amounts of arsenic.

2. The largest amount found was 0.6 milligram of arsenous oxid in 1.0 cubic centimeter. The average amount was 0.18 milligram per cubic centimeter. The shortest interval at which arsenic was found was thirty minutes; the longest two hours.

3. With successive injections, the fluids in general show progressively smaller amounts of arsenic for the same time interval.

4. In general, those patients consistently showing the larger amounts of arsenic in their fluids made the more rapid improvement.

5. It is suggested that intravenous injections of divided doses at one or two hour intervals would prove more effective in maintaining a high concentration of arsphenamin in the blood for longer periods, and thus possibly allow increasingly greater amounts to pass into the perivascular spaces.

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MENTAL HYGIENE AND SOCIAL WORK: NOTES ON A COURSE IN SOCIAL PSYCHIATRY FOR SOCIAL WORKERS.

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Pathology is older than sociology, and medicine, *i.e.*, applied pathology, has more triumphs in its history than has social work, *i.e.*, applied sociology. Mental hygiene, a branch of applied pathology, is naturally dominated by physicians and by a special group of physicians, viz., psychiatrists. But is there a co-ordinate branch of applied sociology? Does the medical branch of applied sociology have a subdivision deserving the name psychiatric social work? Or, put pragmatically, is there a group of psychiatric social workers who have control of a field of "psychiatric social work" co-ordinate with "mental hygiene"?

The comparative youth of sociology, of applied sociology (social work¹), of applied medical sociology (medical social work²), and of the putative new branch (psychiatric social work^{3,4}) entails a certain fluidity of nomenclature at first not unserviceable. Nor would it be necessary or even desirable to fix at the outset a nomenclature for logical compartments of an undeveloped art, as we might thus condemn the art to stasis or bad *culs-de-sac*. I raise the question, therefore, only on the practical ground of whether or no specialists, professional or technical, have been developed or are in course of development in this field of sociology. For, if so, that is, if the new art has found its shoulder-to-shoulder workers, then it is high time to state the principles of their alignment, and the nature of curricula and practical experience necessary for these workers.

I assume that medicine and applied sociology are professions with their professors and practitioners having due recognition in university degrees, M.D. and Ph.D., respectively, and in commonly accepted titles, *physician* and *sociologist*. On account of the recency of sociology's foundation, everybody is prepared to accord to many workers without the degree Ph.D. just as good and perfectly equivalent dignity. Nor should such a contention as that sociologists will more and more tend to be Ph.D. bearers be regarded as propaganda of Professor James' "Ph.D. octopus," since everybody is now aware that novelty, in medicine, sociology, or any other branch, is perhaps more likely than not to come

from some distant science. Thus the teaching branches of medicine are more likely to get novelty from, *e.g.*, chemistry or physics than from their own more limited fields. And the teaching branches of applied sociology are very likely to profit more from anthropology or psychology than from the recognized rounds of sociological research as narrowly conceived, *e.g.*, in the field of social statistics. Perhaps even it might be said that many branches of didactic medicine and sociology would get more food for new thought from each other than each from itself. We are not here talking of the technique of research, but of the sort of training which allows us to concede that such and such a person is entitled to rank as a professional sociologist alongside the physician.

There are, to repeat, persons to whom we accord an equal professional rank as didactic or practical masters of their fields — physicians and sociologists. But every professor must develop apprentices or ancillary workers of various sorts. Thus medicine has developed the *nurse*. Applied sociology, I make bold to say, has developed quite on the same level — the *social worker*. One has to be bold! For many social workers, perfectly modest as to their own private capacities, have developed a surprising group-consciousness concerning the proper dominance of the ideal social worker in all social maladjustments. This group-consciousness of social workers often leads to a not unwarranted derision on the part of physicians, judges, men of the world. The point here is probably simple: just because not every eminent sociologist is a Ph.D. and because many sociologists prefer to call themselves “workers” (from the American habit of denouncing theory and suspecting all ’ologists of carrying lugs), many humbler persons conceive that there is no theory behind their practice, no sociology behind their social service. It is as if, on the one hand, physicians seeing that medicine is so much a matter of nursing should announce themselves as a kind of nurse; it is as if, on the other hand, nurses seeing that the physicians are so ignorant of many practical matters should suddenly conceive that nurses were after all a sort of physician. Practically, too, in the present phase of social service development, social workers are apt to be of a finer grain and a more finished higher education than the majority of nurses, and accordingly the social workers are inclined to develop a feeling of group-superiority to nurses. This attitude is of course a matter of dispute as to its justifiability, but is none the less existent. But I conceive that, unless a person

wishes to go to the length of special training of professional grade, he can hardly claim equivalence to a man of professional training. I conceive that professionally trained social workers, of the Ph.D. level or equivalent, will finally admit themselves to be sociologists, albeit applied sociologists. And I hope that further there will be a group-consciousness developed of social workers below the 'ologist grade with an attitude resembling that of nurses to their work — an attitude, according to temperament, of humble pride or proud humility with respect to their acknowledged leaders. Nor should the term *profession*⁵ be made a stumbling-block: if nursing is a profession, so ought social work (below the level of sociology) to be acknowledged a profession also; but this last is a matter of terms only.

We thus obtain the following comparisons: —

| | |
|---|---|
| Pathology. | Sociology. |
| Medicine (<i>i.e.</i> , applied or practical pathology). | Applied or practical sociology. |
| Degree: M.D. | Degree: Ph.D., or equivalent experience. |
| Practitioner: physician. | Practitioner: applied sociologist (more modest titles or special titles usually assumed). |
| Auxiliary: trained nurse. | Auxiliary: trained social worker. |

Up to this point, I think, all will agree who have looked into the facts of actual progress in the two fields. Considering the relative novelty of sociology, we can only regard it as very striking that the practical social worker has so soon taken her high place in the world alongside the nurse.

But no two sciences or arts can in these days long exist without fruitful contacts. Pathological and sociological progress have gone hand in hand. Many a physician is, we say, really and by temper a sociologist; many a sociologist develops so deep an interest in, *e.g.*, sanitation problems that he becomes in effect a physician, at least an expert in public health. Social medicine and medical sociology have much in common: either could receive the term *theory of the public health* without special error of definition.

Not to linger over the definition of public health, hygiene and preventive medicine as against the non-medical branches of sanitary science and art, it is clear that both social medicine and medical sociology have brought to life auxiliary groups of practi-

cal workers, viz., the *public health nurse*⁶ and the *medical social worker*. It is clear, too, that, just as social medicine and medical sociology are different in their points of view, so the aides in the practical work of each field are likely to have a different point of view. If the lively growth of the public health nurse group sometimes threatens to engulf the medical social worker (*e.g.*, by proposals that the same curriculum will do for both), the fact is that no such forced union will ever take place, judging by the quality and nature of the persons each field has so far attracted.

Assuming certain differences between the public health nurse and the medical social worker, I want to press to another inquiry, whether the art of mental hygiene, taken either as part of medicine or as part of sociology, has the right to think of establishing its own auxiliaries, *i.e.*, by a kind of differentiation of nurses on the one hand and of medical social workers on the other.

Now it is obvious that the public health nurse of to-day is no better prepared to be an aide to a psychiatrist than the ordinary physician is trained to deal with psychopathic cases. Should there not be a new group of nurse-like human beings who should be aides to psychiatrists in much the same sense as public health nurses are aides to the public health physicians? On the other hand, should not there be a special group of medical social workers skilled in the psychiatric side of medical sociology? Or will, perchance, these two kinds of auxiliary be identical, both as to the timber we choose to develop and as to the curriculum we lay down?

Another parallel column array may clarify the issue: —

| | |
|----------------------|---------------------------------------|
| Physician, M.D. | Sociologist, Ph.D. (<i>et al.</i>). |
| Trained nurse. | Trained social worker. |
| Public health nurse. | Medical social worker. |
| Psychiatric nurse. | Psychiatric social worker. |

The point raised is whether either or both of these last-mentioned auxiliaries should be developed, and, if something of the sort is desirable, whether the training of these mental hygiene aides ought to be specially conceived *in re* curriculum and experience.

Every psychiatrist, nay every man of the world, is familiar with nurses and social workers (even medical social workers) who would manifestly *not* do either as trained aides in mental hygiene or as timber for such. On the other hand, everybody knows a few persons, whether nurses, social workers, or just

human beings, who admirably fill special requirements in the mental hygiene of some situation or would probably soon become fitted for such work. We think of sympathy and firmness, adaptability and steadfastness, quick insight and profound commonsense, modesty and knowledge of the world, and always and forever tact without prevarication, as desirable qualities for these persons. People in general ought to have these qualities too; but we want them more intensively still for our proposed mental hygiene aides. How wonderful, we opine, would it be if we could only reproduce by the scores and hundreds that particular nurse, social worker, clinic manager, companion, usher, secretary, clerk, psychological assistant, probation officer! Oh, if the world were better stocked with persons of such understanding! Alas! we are inclined to believe, the real mental hygiene aide *nascitur, non fit*.

I have recently given two sets of lectures to social workers on what I termed social psychiatry. They were given at the instance of the School of Social Work in Boston, and the topics were chosen in consultation with Miss Lucy Wright, Associate Director of the School, which is a department of a college for women, — Simmons College. These lectures are my excuse for a psychiatrist's taking a few plantigrade steps in the garden of social work.

In the parallel columns above we found ourselves endeavoring to contrast at every turn the work of the physician and his aides and the work of the sociologist and his aides. Yet when we came down to the practical question — whether there might be developed a special group of lay aides and advisers in mental hygiene — we found ourselves reduced to acknowledge that perhaps these persons are born, not made.

All through the preparation for lectures on social psychiatry and especially in the discussions themselves, sundry rather profound differences in point of view seemed to stand out in relief, making it appear as if the trained social worker would not as such readily grasp the point of view of the mental hygiene aide. I have placed some of these differences or tendencies to difference in parallel columns.

Mental Hygiene (taken as a Department of Medicine).

Primary aim: aid of individual.

Tends to sacrifice community for individual.

Tends to sacrifice family for individual.

Social Work (taken as a Department of Sociology).

Primary aim: aid of community.

Tends to sacrifice individual for community.

Tends to sacrifice individual for family.

| | |
|---|---|
| Hesitates to place patient in an institution. | Overreadily suggests placing patient in an institution. |
| Overoptimistic for the individual, overpessimistic for the community. | Overoptimistic for the community, overpessimistic for the individual. |
| Underrates effect of environment upon patient. | Overrates effect of environment upon patient. |
| Overanalytic and apt to consider task done with analysis. | Oversynthetic and apt to rush into premature conclusions. |
| Has little confidence in legislation as panacea. | Loves to devise stiff legislation. |

But is it wholly fair thus to parallel mental hygiene and social work? For above, did we not contrast social work (that is, applied or practical sociology) with medicine (that is, applied or practical pathology)? We did not co-ordinate social service with mental hygiene as divisions of study and practice on the same level. Might it not be that social work, though its primary aim is the aid of the community, will find somewhere within its scope sufficient play for the individual's advantage also? Though social service tends or seems to tend to sacrifice the individual for the community, may it not be that somewhere within the scope of applied sociology the individual will be rescued? May it not prove possible to aid the community without sacrificing the individual, at least the so-called normal individual? In brief, by isolating mental hygiene as a subordinate department of medicine, have we not at the same time narrowed our issue so far, for the purpose of bringing the individual into the center of the stage, that a wholly artificial contrast and distinction has been set up between mental hygiene and social service?

We shall in the sequel, I think, become certain that the practical aims of mental hygiene and of social work are largely identical. Yet it appears to me that they will always remain not wholly identical. It appears to me that the claims of the individual as such are not only logically but also psychologically and practically distinct from the claims of the community. In short, I think it will be possible to show that the point of view of medicine and the point of view of social work are at bottom sundered from each other, so that the physician and the sociologist, the nurse and the social worker, the mental hygiene aide and the psychiatric social worker, will always remain persons with somewhat separate sentiments. It is worth while to insist that these sentiments though separate are not necessarily opposed to one another. It is even possible that within a single person-

ality a worker can be an effective individualist, on the one hand, and an effective social-groupist, on the other; that one can be both a physician and an applied sociologist successfully; but the success attained will probably be like that in which the right (or medical) hand, will not know what the left (or social) hand, is doing. It is my belief, though this is not the place to expound such, that the entire point of view of medicine is at bottom individualistic, though mental hygiene taken as a subordinate department of medicine is even a little less individualistic than the rest of medicine. I feel that, theoretically at least, the physician is often ready to sacrifice both the community and the family for the sake of saving, prolonging, or sweetening the life of the patient. It is my judgment, also, that the majority of physicians will be found holding most of the points of view listed in the column under mental hygiene above.

One cannot help noting, as above mentioned, that mental hygiene is, on the whole, a little less individualistic than the rest of medicine, and that, by the same token, the medical branch of social service, and especially the psychiatric subdivision thereof, is a branch of social work in which the individual's advantage stands out a good deal more than in social work at large. The unit of interest for the physician is the patient; the unit of interest for the social worker is the family. The unit of interest of the mental hygienist remains primarily the individual patient, but on account of the important public and social relations in which the individual patient stands, the mental hygienist must perforce see the patient in the midst of an entourage. The mental hygienist must confront, even more than the physician at large, that somewhat mysterious entity known to the older sociologists as the *Socius*. Per contra, the psychiatric social worker is apt to forget the community somewhat, to forget the milieu, and to see the small entourage of the patient's family dominated by the psychopathic figure in its midst. Now, whether you come at the situation as a mental hygienist and see the psychopath only a little more clearly than his entourage, or whether you come at the situation as a psychiatric social worker and see the entourage only a little more clearly than its contained psychopath, amounts to a pretty tenuous distinction, at all events when it comes to action. The mental hygienist has left behind the merely medical matter of diagnosis, prognosis and treatment of this particular case shelled out of the family group, and the psychiatric social worker has almost, if not quite, forgotten that such a unit as a

community exists. In short, it is almost all one whether the mental hygienist takes the psychopath as his unit of interest, and the psychiatric social worker the family as the unit of interest. The real point lodges in the relation between the psychopathic figure and the other figures in the family entourage. At this level of discussion, the mental hygienist would scoff at the thought that he tended to sacrifice family interests to individual interests, and the psychiatric social worker would alike deride the notion that the individual's interests were being sacrificed for those of the family. Time was when I should have thought the drawing of this distinction superfluous and the idea depicted a truism. However, in the course for social workers which gave rise to these notes, I found that the differentiation of these two points of view was a very live issue; and upon turning to sundry works upon sociology and community work, I am only strengthened in the conclusion that clarity upon this point — as to the actual unit of interest in sociology — is not readily achieved. It does not do to say that the distinction is licked up and vanishes in a higher unity; for that higher unity invariably turns in most modern books on sociology into the community. In any case, whatever the ultimate truth, it is important for the social worker to get at the point of view of the physician for the sake of mutual, practical understanding.

Many card-catalogues in social agencies employ the family as their unit, the family being as a rule an entity which is somehow economically at fault. But when it comes to medical social service, and especially to psychiatric social service, I am inclined to think that the card-catalogue unit ought to be the patient and not the family.

The first of the two sets of lectures to social workers was given to a selected group of advanced workers, who engaged in more or less free discussion as to the distinctions just drawn. I am not sure whether the existence of a field of mental hygiene as distinct from that of psychiatric social work was conceded by all my hearers; but if the existence of two points of view and two angles of approach to the same mass of material was allowed, much I think was accomplished. At any rate, I think there was no doubt in the minds of the listeners that a field of psychiatric social service existed distinct from medical social service as a whole. I think it became plain that schools for social work or philanthropy, or under whatever name they may masquerade, should specialize their training for advanced workers more than has been custom-

ary in this matter of social psychiatry. Whatever doubt there may be as to the nomenclature of these fields, there can be no doubt, and especially in view of the social service hopes engendered by the war, that new tasks for expert propagandists are popping up on every side. In such a journal as "Mental Hygiene," the expert propagandists ought to exchange counsel and prepare for the popularization that must come in subsequent years. The war considerations permit us to take up a good deal of slack in the program; for in the war stress, nothing flaps and dangles as it seemed to do a few years since. Anybody's nomenclatural suggestions are thrown at once into tense looms at Washington, and, lo! "neuropsychiatry," "neuropsychiatric experts," "neuropsychiatric units" get born or at least christened. How long it might have taken without a war to tie clinical neurology and psychiatry together thus closely is impossible to say.

The term *mental hygiene* itself, one had to maintain with the social workers, was a good term. Even its apparent vices could be shown to be merely unevolved virtues. The term *hygiene* had of course been commandeered by the public health movement, which styled itself a movement for hygiene and preventive medicine; yet it was not at all clear that the term should have been commandeered for physical considerations only. To be sure, the hygienist of the epidemic-preventing and sanitary group is apt to have a feeling of confusion and impotence when confronted with the term *mental hygiene*. Ten to one, such a physical hygienist has never looked at the economics of even the insanity problem (that small corner of the whole field of mental hygiene); or, if he has looked thereat, the huge state costs of committable mental diseases, dwarfing the costs of the physical hygienist's own field, are likely to be dismissed with the thought that insanity belongs somewhere with death and taxes — a necessary evil and drag upon civilization, bound to remain at about the same level or even to increase and get beyond public control. The vision of preventive *mental hygiene* is hardly obtainable by the physical hygienist of the day.

There is, of course, one comfort in the neglect of mental hygiene by public health workers. The mental hygienists themselves will have none to blame except themselves if their field is not cultivated aright. We remain in a horticultural and not an agricultural phase in mental hygiene as yet. Let us not develop a *hortus siccus* of —

Leaflets for the Lazy.
 Blessed Don'ts for Blue Devils.
 Buried Memories and the Need of Careful Exhumation.
 Attitudes to adopt toward New Ideas.
 Efficacy of Courtship under Medical Supervision.
 Can the Feeble-minded really become Bankers?
 Thomas Jefferson *versus* Alfred Binet.
 Something to be said for the Bolsheviki.

Possibly these titles but remotely suggest the so-called "health-grams" of the day, but I am sure that no mental hygienist is quite ready to institute a mental hygiene program consisting chiefly of punch.

In order practically to bring out the individualism of mental hygiene as contrasted with the family-groupism and community-groupism of social work, the technique adopted in the courses on social psychiatry here discussed was to demonstrate in skeleton form the histories of a number of intensively studied social service cases from the Psychopathic Hospital group. They were largely supplied from special studies by Miss Mary C. Jarrett, and a large minority of them had been published in various papers from the Psychopathic Hospital.⁷⁻¹⁴ For the purpose of these courses, however, the cases were grouped and studied in different ways. In the first place, cases were analysed from the standpoint of a triple division of mental hygiene into public, social and individual problem groups. I have discussed this tripartite division of mental hygiene in a previous paper,¹⁵ and will here recall only that the distinction follows one of Dean Roscoe Pound in his chapters on sociological jurisprudence, drawn between the interests of organized government, on the one hand, as against unorganized community interests on the other, both being opposed to the interests of the individual. It was easy to show in the skeleton analysis of social service cases how public, social (in this narrow sense of non-governmental) and personal interests came into play. It was easy for the social worker, on logically separating out the public aspects of the case, to catch the point of view of the judge, the hospital administrator and the legislator, and the immigration authorities, in certain instances. Again, in other instances, by the pure process of separating the personal aspects of the case out from the social and public, it was quite possible to get an angle wholly different from the ordinary social worker's angle. It became easy to see how circumspect must be the management of a case with public aspects, how delicate that in a case

with personal difficulties. The psychiatric social worker was thus taught to see what the mental hygienist starts with knowing, namely, that a large number of problems in social psychiatry cannot be left to the management of the social worker, since the heavy hand of organized government and administration, and the filigree psychic interior of many a personal situation interpose. The technique of handling judges, on the one side, and physicians, on the other, without prejudice and with due consideration of authority, can be simply taught by means of this tripartite distinction of the problems of social, psychiatric and mental hygiene into public, social and personal.

$$\text{Group} \left\{ \begin{array}{l} \text{Public} \\ \text{Social} \\ \text{Personal} \end{array} \right\} \text{Private}$$

Valuable as the tripartite distinction — public, social and personal — often is, for other purposes we need to distinguish public from private (private including non-governmental social matters as well as personal ones), and we need to distinguish group matters from personal ones. The distinction “public *versus* private” has in applied sociology far less range than in jurisprudence; but the distinction between group and personal matters is in the forefront of most works on sociology. Works on ethics also are apt to deal nowadays with group ethics rather than with the ethics of the individual.

As mental hygienist, it was my duty in these lectures to lay more stress upon personality than upon the properties of the social group. It proved clarifying to recall to my hearers the truism of psychology, that every personality is itself in some sense a group. I used for the purpose the familiar distinction of the spiritual, material and social — selves of William James — and used his grammatical distinction of the Ego and the Me. Leaving out the social self or social Me as a group concept, I pointed out the value of some distinctions, drawn by James in his famous chapter on the self, between the Ego and the material Me. The figure of speech, if it be such, which contemplates the material Me as now and then in control of the Ego, is particularly interesting to the social worker, familiar with the concept of group ethics; and the metaphor of the personality at war with itself, if it be a metaphor, is becoming a familiar one with all the modern work on mental conflicts — the new branch that we may call psychomachology. When the approach is made to these penetralia of

psychology, it becomes easy to insist that the obvious thing is not always the right thing to do in a psychopathic situation.

Social workers should not always rush in where psychiatrists fear to tread. This matter of the relations of the patient to himself (quite too simply dealt with in the metaphor of the Ego and the Me) I have expounded to a slight extent elsewhere.¹⁶ The whole grammatical point of view is doubtless too simple to account for much of the whole problem. Still I found that the concept of the *passive voice* proved an interesting one to many workers. The social worker often confronts a family with a more or less psychopathic figure objectively dominant in the scene. I say objectively dominant because the disturbing figure himself may be from his own point of view a depressed person quite in the passive voice. He may be even a rather violent feature of the situation, and may objectively do many dangerous and destructive things; yet upon analysis of his psychic interior, the situation may prove one, for the psychopath himself, of the passive voice. This key to the psychopathic situation may be quite missed by the social worker, who judges only by the obvious violence and destructiveness of the man's actions. The caged lion is objectively active and letting loose a good many foot-pounds of energy, but he is nevertheless a lion caged, and from his own point of view in the passive voice. The proper therapy from the lion's point of view would not be to anesthetize but rather to uncage the lion. Again, the foil to this situation occurs when the psychopathic figure in the family situation is to all outward observation an inoffensive quietistic person — who however refuses to work! Such a man, though objectively inactive, is sometimes subjectively extremely active; he is so far as the family is concerned, playing 'possum as to work. He is not at all in the passive voice, from his own point of view, but is actively dominating his environment.

These suggestions must suffice to indicate the value of an analysis of psychic situations from the simple grammatical standpoint of the passive voice. It appears that many of the social service cases presented could get a very considerable illumination from this source. Analysis of the individual in the light, say, of modern work on social psychology would demonstrate how every individual is, as it were, a group within himself, and how now one, now another, instinct would come to the fore.

Many of the skeleton social service histories were reviewed several times in the above and other connections. I will give one more instance of a scheme of analysis derived more from medicine

than from sociology, but for all that of some value. It can be objected that sociology too readily considers men as alike; too readily harbors such an idea as the Ricardian idea of the "economic man;" too readily entertains the thought that norms exist, and that the feeble-minded and geniuses are merely low and high points on a smooth curve. Medicine at all events, though it endeavors to use the quantitative and statistical methods available, is more interested in qualitative differences, and may perhaps rather too readily find these in its material. Medicine looks more at what is lacking or has been lost, or is slanted and twisted out of shape, than at the low values of measurements. Medicine is one of those sciences that deals with evil as such. Sociology and ethics might very happily get on without much more evil than would serve as a condiment in a quantitative world. I uphold the possibly one-sided view that we should study evil in and for itself for the purpose of destroying it, or as much of it as possible, leaving the good and especially the milleniums and Utopians to take care of themselves. For this purpose, I made a tentative classification of the kingdom of evil as follows: —

Disease.
Ignorance.
Vice.
Crime.
Poverty.

Abstracting from other forms of evil, and so far as possible subsuming them under one of these five divisions, I inquired whether all the cases of social maladjustment did not relate with one or more of these great groups of evil. Whereas the tendency of the sociologist would be to consider poverty first as the arch cause of social maladjustment (the argument from the submerged tenth and the like), I felt that the first inquiry should be in all cases of social maladjustment whether there was not somewhere in the situation a more or less *medical* scene. The figure in that scene might be an obviously sick, even a physically sick, man; but, less obviously, the medical figure might be psychopathic, and the defect might be so mild from the medical point of view that no one really suspected that the nucleus of the social maladjustment was really a psychic one.

But again supposing all question of physical or mental disease or defect could be ruled out, might not the dominant feature in

the scene be some form of error, due to lack of education and intellectual training? It is really a positive evil in certain circumstances not to know the mother tongue of the country in which one lives. But again supposing there is no bodily or mental disease and nothing attributable to poor education, there might be, thirdly, some vice or bad habit due to poor moral training or demoralizing experience. All these, and the fourth question of being in some difficulty on account of the breaking of a law or ordinance, or being in the hands of some financial stress or debt, or other engagement, would need to be placed ahead, according to my view, in many cases, of any consideration of poverty as a cause of the social maladjustment.

In brief, before deciding that a case of social maladjustment is one of poverty and resourcelessness to be solved by the familiar methods of poor relief, it appears to me desirable to consider the maladjustment in the light of several prior hypotheses, namely the hypotheses of disease, ignorance, vice (including bad habits), and crime or delinquency. This classification of existent evils and this particular order of examining them, I used in analyzing sundry social service cases from the Psychopathic Hospital. I found, of course, that many instances yielded evils of maladjustment in every one of the five compartments, but in almost every case there was no practical doubt which of the five compartments was the most important. But whether or no these groups of evil are the final ones, whether there should be more or less, and whether the order of consideration should be altogether altered, must remain doubtful. It seems to me that in any event some simple classification of maladjustments, which can be borne in mind in rapid every-day work, ought to be set up, and that experience will determine in what order the analysis of social maladjustment shall take place. Just what fraction of the world's social maladjustments can be safely assigned to mental disease and defect, no man can now say.

In Miss Richmond's valuable book on social diagnosis, I found that fully half the cases there cited to illustrate all manner of general and technical contentions were cases with a strong psychopathic tinge; cases, in short, in which analysis would have found much to its purpose in compartment No. 1 of the kingdom of evil, namely, the disease compartment. If a collection of cases such as these of Miss Richmond's, chosen for quite another purpose, demonstrates so high a percentage of disease, and especially of mental disease, I think it is clear that a revamping of

the whole attitude of social service to its problem may become necessary, and that social work in general will find itself far more medical than it ever formerly suspected; that medical social work will find itself far more psychiatric than any one had anticipated; and that psychiatric social work will find one of its chief aids in mental hygiene.

It would be possible to extend these "notes" greatly, and surely much must be said before the program of social psychiatry in its large outlines for social workers can be regarded as at all settled. Despite certain differences in point of view emphasized above between mental hygiene and social service, I feel that, in the war situation now confronting us, it is important for physicians and sociologists (or social workers, if the name please them more) to make common cause. I brought up the question at the outset, whether mental hygiene had the right to think of developing its own auxiliaries; that is, certain persons that might be called mental hygiene aides, who should stand to mental hygienists as public health nurses stand to the medical specialists in preventive medicine. I am inclined to think that, if such new class of mental hygiene aides were developed, the best source for them would be trained social workers. However, the trained social workers will probably be utilized quite to the full in various Red Cross and other fields. I think that teachers, librarians, psychological assistants, some specially selected nurses, and other persons having an equivalent training, particularly those having a collegiate degree, might be supposed to be the most promising candidates for such work. The chief argument for the A.B. degree is that it not only assures a certain maturity in years, but is rather apt to give the bearer some notion of the importance of language in any situation. Many of our problems are in persons without much English, and an appreciation of their difficulties is best had by persons who have had some sense of the difficulty of language learning.

I feel that a course for psychiatric social workers should be an advanced one, to follow after the lecture work in schools for social workers, though the undergraduate work in these schools also should contain a certain amount of mental hygiene. The advanced course should contain surely a résumé of applied sociology and of the technique of social investigation, and these lectures and corresponding quizzes should be made thorough and inclusive for persons without extensive training in social work. There should, secondly, be a résumé of social psychology, using such a work as MacDougall's "Social Psychology" as collateral reading, besides

various sociological works that nowadays give the psychological point of view an appropriate attention. Thirdly, the general principles of neuropsychiatry (considered as an entity compounded of clinical neurology and psychiatry) should be presented, preferably with demonstrations of patients, and with due remembrance of laymen's difficulties in nomenclature.

The threads of sociology, social psychiatry and neuropsychiatry should then be gathered perhaps in lectures on mental hygiene, on the general field of mental hygiene and on its applications to sociology and psychiatry. The relations of psychiatric social workers to physicians, nurses, occupation workers, vocation workers, and others engaged in reconstruction, should be particularly emphasized in this war-time course, and care should be taken that the work in physical therapy and in handicraft teaching and invalid occupation should be sympathetically understood by the psychiatric social workers, even if such physical and occupational work is not to be undertaken by them.

Supposing such a course to occupy three to six months, it might be possible for some twenty social cases to be worked with by each student under supervision during the time of the course, provided that the course is given in a center where such cases are available and under control. Every psychiatric social worker should be familiar enough with mental tests to understand their applicability, value and limitations. Some twenty mental tests should be performed under supervision during the lecture course. Meantime, the insane, the psychopathic and the neurotic groups of patients should be seen by the psychiatric social workers so that the legal and medical points of view may be understood.

The courses on social psychiatry for social workers, which have occasioned my writing these reflections, were naturally far from complete and only remotely touched several of the major branches here mentioned. In endeavoring to delimit the subject of social psychiatry and lay down its main points for lay social workers, I concluded, however, that lectures for psychiatric social workers of value in the war would have to be at least as extensive and comprehensive as above sketched. That the majority of the war cases will be under military control of course both simplifies and complicates the social service problem, and the military point of view would probably need to be expounded in a separate division of the course.

SUMMARY.

Some reflections have been put together on a course for social workers on social psychiatry recently given in Boston. These reflections deal largely with some distinctions between mental hygiene and social service. Mental hygiene is regarded as a branch of medicine, in a sense co-ordinate with the psychiatric branch of social work.

At first, the distinctions between mental hygiene and psychiatric social work are very clearly and definitely drawn. Particular emphasis is laid upon the individualism of the point of view of mental hygiene as against the groupism of social workers; but in the end, it is pointed out that if mental hygienists are to obtain auxiliaries, such as every expert eventually obtains in the evolution of his art, these mental hygiene aides will probably be best drawn from the ranks of the social workers; they will be a kind of specialized and advanced social worker.

The point is that as the mental hygienist advances from the individual to the family and thence to the community, so the social worker, at first aiming at the community, focalizes upon the family, and finally gets a point of view concerning the individual not far from that entertained by the mental hygienist.

Despite the logical differences, then, between the point of view of mental hygiene and that of social work (logical differences which it is well to bring out when endeavoring to get the medical point of view to some extent over into the minds of the social workers), there will be in practice little doubt that mental hygienists will find some of their most valuable aides in specially trained social workers. Just as the orthopedists will use nurses and others skilled in physical therapy, and just as the vocation workers will use persons specially trained in invalid occupation and in handicraft teaching, so the mental hygienists in war time will crave the aid of specially trained social service auxiliaries; that is, mental hygiene aides that have been given special training.

In the Boston course, largely for advanced social workers who had all had a pretty definite curriculum, stress was laid upon sundry methods of analysis of social data after their collection. Among these methods of analysis was one which took up the question of the public, social and personal aspects of whatever problem of maladjustment was in question. Another dealt with the analysis of the patient's subjective attitude to his environ-

ment and himself — a question of the passive voice. A third dealt with a method of analyzing data from the standpoint of the evils found in evidence, and for the purpose of orderly analysis a tentative rough classification of the kingdom of evil was given.

In view of war contingencies, brief suggestions have been made as to the desirable content of courses for psychiatric social workers of value in war time and after.

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PSYCHIATRIC SOCIAL WORK.

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Social work has always been recognized as an important agent in the field of mental hygiene. When the Committee on Mental Hygiene of the New York State Charities Aid Association was formed, in 1910, one of its early steps was to engage a social worker for the after-care of patients discharged from the State hospitals for the insane and it has been advocating ever since State-wide social service for these hospitals. The earliest publications of The National Committee for Mental Hygiene recognize the social character of the problems created by nervous and mental disease and lay stress on the fact that an important part in the movement must be taken by the social worker. Though this belief has been firmly held by those most closely connected with the mental hygiene program, it has not been put into general practice as rapidly as might have been expected. This slow rate of development is no doubt due in large part to the almost total lack of persons properly prepared for psychiatric social work, and to the lack of definite knowledge among physicians and the public of the character and significance of social work in this connection. Entire ignorance or curious misconceptions of the nature of social work are the rule, not only among the public at large, but among professional people. The term social work has not even found its way into our encyclopedias. The many and varied activities known by that name are united as yet only by a slender thread of common purpose, and have not evolved principles or formulated methods that give them a unified character, which may be recognized as professional. Social work can only be regarded as a profession in the making. Meanwhile there are indications that a rapid increase of social work in the field of mental hygiene is about to take place. Since its effectiveness as an aid in the care of patients has been demonstrated in a number of hospitals for mental disease in the country, it is to be hoped that our government will in some way employ this agency in the recovery of soldiers with nervous and mental disorders.

A new division of social work which may conveniently be known as psychiatric social work is coming to be recognized as a definite field requiring special preparation. It is important to reach a clear understanding of this type of work, first, for the

sake of the practical benefits to patients to be obtained through the increase of social service that is bound to come with better understanding, and, second, for the purpose of presenting to young men and women about to choose a profession the interests and opportunities to be found here. There are many able persons who might turn to social work, who are still under the impression that it is an easy and accessible home outlet for the missionary spirit, or a convenient way for persons of kind hearts and common sense, without education or training, to put their abilities to good use; while college graduates of to-day demand a vocation that calls for brain power and offers a field for progress and development and at the same time affords an opportunity for service. The impulse that actuates them is the scientific spirit; therefore, social work must answer for them the question, "Is there a future of scientific work for the social worker?" There is no ready answer to this question; nor can it be answered satisfactorily until the fundamental concepts of social work have been clearly defined and its practical relations to adjacent fields of activity carefully considered. This paper does not presume to be an attempt to dispose of the question, but merely to indicate the outlines of some of the concepts and relations of social work in the field of mental hygiene. It would not seem to be possible to forecast in any way exactly the course of those forms of activity that are now known as social work. The most that we can do is to take notice of the indications of development that are to be observed at present — to watch the straws that show the way the wind is blowing. Direction, extent and rapidity of growth will depend largely upon the quality of persons who in the future follow the calling of social work. The expectation of largest and surest results depends upon the extent to which social work shall appear to able persons as a pursuit containing possibilities of satisfaction to a trained mind and an active personality.

The term social work has been loosely used to include many forms of activity by many types of persons with various kinds of training and experience; consequently it signifies different things to different persons. Our patients are sometimes led to think that they may secure positions in social work; and a medical student suggested that the difficulties of a psychopathic delinquent patient might be solved by making her into a social worker. In a recent article in "Mental Hygiene," a physician refers to the social worker as a nurse. Mental testing and social work are very often thought to be identical by applicants for

training at the Boston Psychopathic Hospital. The name social work is still vague enough to cover almost any form of work for human welfare that chooses to seek its shelter. But in the obscurity the outlines of four well-marked departments stand out: first, educational and legislative work; second, community work; third, research; fourth, individual work, — social care of the individual, — commonly known as social case-work. Any particular social agency probably exists primarily for one of these four purposes; but at the same time it contributes to one or more of the other groups. It is with individual work and research that the psychiatric social worker is chiefly concerned.

In this work for individuals, the social worker carries vital responsibilities. Any one in any profession who undertakes to advise another person in a crisis, in the midst of some deep and tragic experience, or under the influence of some complicated and profound conflict in life, finds that all the resources of his mind are drawn upon to see the facts, to understand their relation to the persons involved, and to form a judgment of the action to be taken. To go further and assist in carrying out the advice given makes additional demands on his powers of mind and personality. Because he deals with vital matters, the social worker enjoys a specious prestige. He must be rated on the strength of the importance of the responsibilities that he carries and the value of the materials with which he works rather than according to his relative knowledge and achievements. This is a pragmatic necessity, for men associate in their activities on the ground of significance of function and not of academic prowess. The social worker has been inclined in the first burst of enjoyment of his easily won prestige to overlook this distinction, and to occupy somewhat ingenuously his seat among the "experts," overlooking the fact that his "expertness" is in quality something different from that of the physician, lawyer or engineer, who have assimilated the funded knowledge tested and retested by generations of students, and again retested by their own experiences; while the social worker has for his guidance little more than his accumulation of experience, a collection of unorganized observations, methods acquired by rule of thumb, convictions of general principles hastily drawn from scanty data — in short, a kind of well-developed common sense. In a given instance, such expertness may be of higher practical value in a certain situation than the skill of an expert of any of the older professions in a situation of equal importance in his field; and it is not to be discredited or undervalued, for in any circumstances it has a high practical

value. At the present time in the field of social work it is of the first importance since it is all that there is. The consideration that makes the discussion worth while is that full recognition of the fact, — that the social worker only by courtesy professionally ranks equally with members of older professions, — will tend to hasten the day of sound education in preparation and of devotion to scientific methods of development in social work. True insight into his status also enables the social worker to associate more comfortably with his fellow workers in other fields. Some of the friction commonly known to occur between physicians and social workers is undoubtedly due to an assumption of expert authority by the social worker, which the physician of course knows to be unwarranted. Among the great personalities distinctions of acquired power are apt to disappear. When the rank and file meet the great men in close association, they are not reminded of their inferiority; for the great man is conscious of the small part of the universe that he himself has mastered and is not particularly aware of the difference between the heights of his thought and the lowland of his associates, since his concern is with their common distance from perfection. It is within the rank and file that the difference between native capacity and expert skill is significant. The average for native ability among social workers is probably high; but in professional education and in trained intellectual ability, social work is obviously deficient to a large degree.

The average social worker engaged in case-work has not the concepts or habits of thought to fit him to develop his work along scientific lines, to promote, that is, a science of social case-work. The ablest persons from the ranks are continually being claimed by executive positions; and case-work from the point of view of scientific interest is neglected. This situation will continue until education for social work approaches more nearly the character of medical or legal training, so that a larger number of able and well-prepared persons may be found for all positions. Meanwhile the foundations of scientific work may be laid by drawing on the material of established sciences. The social worker guided by the sociologist, the psychiatrist and the psychologist, especially, may perhaps enter forthwith upon the borderland of knowledge that lies between the intuitive and the scientific, and with the addition of his acquired practical skill and practiced observation in his own field begin the formulation of principles which may eventually constitute the applied branch of sociology.

For practical reasons it is desirable that social workers should

be accorded a rank unmerited by professional training, for good social work demands the caliber of person who goes into medicine, law or education. Such persons would rarely be attracted to social work if the status accorded them were not based upon the responsibility of their functions rather than upon their lack of scientific preparation. In departments where this fact is not recognized, the official discomfort of inferior status (which should be distinguished from personal social relations with associates, as it is quite a different matter) is bound to act as a deterrent to the entrance into the work of persons of high grade. Furthermore, the official status of the worker is important because it affects the quality of his work through stimulating or repressing initiative, industry and interest. For example, a psychiatric social worker in a hospital for mental diseases ought to have special knowledge of social matters, capacity for independent judgment, analytical ability, personal power. This is the type of woman who under other circumstances might have studied medicine. In social work, her academic education does not ordinarily go beyond that of the degree of A.B., and her special training has probably been not more than a year's work. Her acquirements compare unfavorably with those of the trained physician. However, it would seem best that the official status of the social worker, even now, should be that which it must be if she had received full professional training, for by this means the interests of immediate work and future growth of the field will be best served. At the same time the social worker should not lose sight of the discrepancy between her acquirements and those of the physician, for therein also lies a serious obstacle to progress.

So far social case-work has dealt mainly with the elementary facts of social adjustment, income, employment, housing, house-keeping; and with the primary social problems, how to find a job, to bring a deserting husband from another State, to get milk for the baby, convalescent care for the sick, to move a family to a better house. Since the elements of a subject must be mastered before its more complicated facts can be approached intelligently, these elementary processes are not to be slighted nor thought of lightly. Besides, they are not necessarily easy to accomplish, and although relatively simple to comprehend, they may be both complicated and difficult from the point of view of performance. Considerable progress, too, has been made in the ease and precision with which facts of this sort are handled in individual cases. Without doubt data could be obtained to show a marked improvement in case-work in speed and effectiveness; that is, it

would probably be possible to measure our advance by showing a larger percentage of successful results achieved in a shorter period, and thus to make apparent a quantitative difference between the accomplishment of the untrained worker of the past and the social worker who has received such systematic preparation as the present day affords. In both types, however, you find economic interests and preoccupation with the elementary social facts, the difference between trained and untrained being a matter of degree, which, it need not be said, is a difference of great practical value. But a qualitative difference is beginning to appear. We see case-work about to pass into a psychological phase. Many influences have been bearing upon this change, some of them going back ten years or more. No vital change occurs in a year or a decade; slight signs appear, increase in numbers and significance, gradually and imperceptibly changing the emphasis until finally the subject appears to the majority from a new point of view. No one will be able to say when or where factors of personality rather than factors of environment began to be the dominant influence in social case-work. It is clear that environment prevails at present. It is becoming evident that personality will become the leading interest in the future. A distinct impetus along this line of development comes from the association of social work with psychiatry in the care and study of psychopathic persons. As in other fields, knowledge of the normal has been drawn from study of the abnormal, so from social psychiatry we shall gain understanding of normal human associations.

If social case-work is understood to mean the effort to organize all elements within the individual and his environment, so that he shall be adapted to social life as successfully as possible, it is clear that it should always be in some degree psychiatric. In the same way, all social case-work may be regarded as medical social work, in so far as the bodily health of the individual is of primary concern in every case. In short, all matters of individual human life are in some degree the common factors of case-work, whether the work is being done for dependent families, neglected children, homeless men, unmarried mothers, delinquents or sick persons. The distinguishing feature of any specialization is the emphasis of a point of view, which leads to growth of knowledge along the line of special interest and to particular skill in dealing with cases of a certain type. The characteristic then of psychiatric social work is that it approaches social case-work or social research from the standpoint of psychiatric and psychological

analysis of personality, and for the purpose of adding to psychiatric knowledge. It may be carried on in hospital, court, factory or social agency. It requires workers with a training that will fit them to collect social data necessary to psychiatric diagnosis, to understand the significance of the physician's diagnosis, and to afford social care that will contribute to medical treatment. It presupposes training in the general principles and methods of social case-work, which, however, may be acquired through clinical work with psychiatric cases, as well as with any other group of cases, since the fundamental factors are common to all types of cases, and since also in the families of psychopathic patients all other types are sure to appear. Adequate equipment, which is not yet provided by any university or school, calls for at least two years' graduate work with advanced courses in psychology and sociology, some elementary knowledge of medical sciences and psychiatry, and at least a year of experience in case-work.

Stimulus to undertake preparation lasting two or more years should be found in the fact that the development of psychiatry, considered both as a science and an art, is dependent to a large extent upon social data and social experiment. Studies of heredity, of the incidence and progress of certain diseases, of the etiology of others, call for social investigation. Satisfactory conclusions on methods of treatment of mental disorder in the community cannot be reached without the co-operation of social work. Finally, if the study of human behavior is to be carried on into a science of character, there will clearly be need of the specially trained psychiatric social worker for purposes of observation and experiment in the field of social data.

To sum up, although social work has always been recognized as part of the mental hygiene program, its activities have been slow to spread. The reason, at least in part, may be found in lack of social workers with suitable preparation and in general ignorance of the nature of the work. Since there are indications of an increase in psychiatric social work in hospitals for mental disease and probably in war work, clearer understanding is important to mental hygiene, especially for the purpose of enlisting able persons for training. There are many popular misunderstandings of social work, which identify it with nursing, with mental testing, with occupational therapy, with neighborliness. The term social work embraces a varied group of activities, which from the point of view of function include four departments, first, work for in-

dividuals or case-work; second, educational work; third, community work; fourth, research.

By reason of the vital character of the responsibilities that the social worker carries, he holds a position in relation to the professions that cannot be justified on the ground of professional fitness. It is perhaps necessary that the social worker should for the time being occupy this unmerited high rank, since the future development of social work demands persons of professional caliber, and since such persons would rarely be attracted to social work if the status accorded them were not based upon responsibility of function rather than upon scientific ability. On the other hand, the social worker must avoid the danger of resting satisfied with this easily won prestige, so that he neglects to apply himself to the scientific development of his subject and to the advancement of social education. At the present time, social work is obliged to look to other professions for scientific leadership. Especially through psychiatry, psychology and sociology an influence may be expected that shall lead eventually to the establishment of social work as the applied branch of sociology.

In the past the economic interest has been paramount in social case-work, and is still dominant; but there are indications that the dominant interest is becoming psychological. This trend receives a strong impetus from social psychiatry, which through the study of the abnormal seeks knowledge of normal character.

Social case-work, the effort to adapt an individual successfully to social life, must always be in some degree both psychiatric and medical. All forms of social case-work have common factors, and the special branches are characterized by the interest upon which they focus. The main interest of psychiatric social work is personality, and its ultimate object is to contribute to knowledge of social psychiatry, which in turn has for its goal the advancement of mental hygiene. Adequate preparation would require at least two years' graduate work, including a year of social case-work. The social worker thus trained should find large scientific opportunities in the field of social psychiatry.

THE TRAINING SCHOOL OF PSYCHIATRIC SOCIAL WORK AT SMITH COLLEGE.*

I. EDUCATIONAL SIGNIFICANCE OF THE COURSE.

BY W. A. NEILSON, LL.D.,

PRESIDENT OF SMITH COLLEGE.

The situation which confronted Smith College last spring when it was proposed that it should undertake the training of psychiatric social workers contained two factors. In the first place, the trustees of the college, like those of its sister institutions, were eager to put their resources at the disposal of any branch of the government which could show how to be of service to the country in the present emergency; and in the second, they were considering the more general and permanent problems of the duty of the college in the matter of vocational training and of the use of the equipment of the institution during the long vacation. The proposal of The National Committee for Mental Hygiene afforded an opportunity for an experiment dealing with both factors.

The first stage of the experiment has proved an unqualified success. Between sixty and seventy students were selected on the evidence of previous training and general fitness from a large number of applicants from all sections of the country. They varied in age from girls just out of college to experienced social workers in middle life. But they were all actuated by the desire to furnish themselves with a knowledge and aptitude which would enable them to help in salvaging the human wreckage of the war, and they manifested an acute intellectual curiosity as to the subjects studied. The course was intensive in the best sense. Students and teachers were in close and constant intercourse. The whole group were simultaneously interested in the same problems, and the intellectual interest was sharpened and maintained by the prospect of immediate practical application. The course was

* The Training School of Psychiatric Social Work was established by the authorities of Smith College and the Boston Psychopathic Hospital under the auspices of The National Committee for Mental Hygiene, acting through a committee composed of E. E. Southard, M.D., chairman, William L. Russell, M.D., L. Pierce Clark, M.D., Walter E. Fernald, M.D., and William A. Neilson, LL.D.

The course consists of eight weeks' instruction given at Smith College, July 8 to August 31, 1918, and six months' practical work at different centers.

The courses of instruction included sociology, under Prof. F. Stuart Chapin, Smith College, psychology, under Prof. David C. Rogers, Smith College, and social psychiatry, under Dr. Edith R. Spaulding, director, Psychopathic Hospital, Reformatory, Bedford Hills, N. Y. The practical work is under the general supervision of the director of the training school, Miss Mary C. Jarrett, chief of social service, Psychopathic Hospital, Boston.

varied, containing lectures on general theory, study of the literature of the subjects of psychology, sociology, social case-work and psychiatry, discussions of methods of investigation and record, laboratory work in mental tests, and clinical demonstrations. Thus the work was at once concentrated and varied, theoretical and practical, a gathering of information and a training in ways of thinking and acting. The outcome was an unbounded enthusiasm, showing itself in hard and persistent work and in the development of a remarkable *esprit de corps*.

It is obvious that there were present conditions exceptionally favorable for an educational experiment: a variety in age, personnel, previous history, and in the range of studies; a homogeneity of interest and spirit; and an absence of distraction. The multiplicity of extra-academic activities which are thought necessary in the ordinary college course was absent, yet any visitor to the school was struck by the high spirit of the group almost as much as by the seriousness of the underlying purpose. When the six months of practical training which is now following the eight weeks of study are completed, there will be at the disposal of the surgeon-general a body of women eager, intelligent, devoted and exceptionally equipped.

All this has been accomplished at a minimum of expense. The college had no funds for the purpose, but provided classrooms, books, laboratories and dormitories. The students paid for their board and \$25 towards running expenses. The balance was provided by the generosity of Smith College alumnae. Teaching and administration service were offered free, wholly or in part, by members of the college staff; a large number of distinguished specialists gave their time and knowledge without other recompense than the sense of serving the common cause; and Dr. Houston added immensely to the value of the training by placing at the disposal of the school all the resources of the Northampton State Hospital, and by giving the services of himself and his colleagues in the conduct of clinical demonstrations.

Educationally, the undertaking has been fruitful and illuminating. We have learned that, even in an exceptionally hot summer, Northampton is an entirely possible location for a vacation school, and that for this purpose it has advantages over a great city in its quietness and isolation. We have had it proved that on the basis of a college training a highly specialized body of knowledge can be imparted in a surprisingly short time to students who know what they are to do with it and are accordingly

eager to avail themselves of every opportunity. Others can speak with more authority on the importance of having organized the preparation for a new profession, a profession whose scope is by no means limited to war conditions. The college has its reward in having secured valuable evidence to aid it in solving the problem already stated — of doing its share in providing women with a worthy profession, and in making its equipment render an increased return in service to the community.

II. A LAY REACTION TO PSYCHIATRY.

BY E. E. SOUTHARD, M.D.,

DIRECTOR, BOSTON PSYCHOPATHIC HOSPITAL.

Each of us who had contact with the Smith College part of the war course in psychiatric social work must have made his own differential reaction to it; at all events, nothing was more in evidence, I fancy, than individuality in theory and in practice this summer in Northampton. Besides the war fervor and the habitual zeal of young women in learning new things, there was a certain tone of maturity of point of view (and not too great or over-ripe maturity) on the part of these social work students that surprised a little those of us who were familiar with the atmosphere of social work conferences in the past. Here was post-graduate maturity, but, on the other hand, here were none of the peculiarities of the professional uplifter or reformer.

When I wrote my paper on "Mental Hygiene and Social Work: Notes on a Course in Social Psychiatry for Social Workers,"* I had no conception that the idea would come so quickly to fruition. Ferments, however, work fast these days and The National Committee for Mental Hygiene quickly appointed an appropriate sub-committee which was enabled, through the courtesy of the Boston State Hospital trustees and the Permanent Charity Fund, Boston Safe Deposit and Trust Company, trustee, to join with Smith College in a plan to get the didactic part of the teaching accomplished early in the summer.

It is a question whether men and women differ from each other or resemble each other so much as has been claimed in the past. We can safely assert about the present course, however, that the somewhat strong food of modern psychiatry and psychopathology got digested by our healthy young enthusiasts in quite the proper spirit. The results answered for all time the question whether

* Mental Hygiene, Vol. II, pp. 388-406, July, 1918.

certain publicities were permissible. Were these publicities practically impossible for so eclectic a group of women (some seventy chosen on experience, recommendations and internal evidence of letters), then verily the work of mental hygiene auxiliaries would have to be denied to women. There could not be a branch of psychiatric social work for women if women could not understand (and so to say *metabolize*) the main psychiatric facts as they affect society.

Accordingly, I regard it as a great achievement, first, that so excellent a group of women came forward; secondly, that they could have been so successfully chosen from a larger group; thirdly, that they were able to get the main facts of social psychiatry without trace of evil reaction or discomfort. I am bound to say that with what I know concerning psychiatric instruction for medical students, these women got a fuller account of the general aspects of mental diseases than medical students in their third year ordinarily get in medical schools (of course, I do not mean to insist that what they got, though in some sense fuller, was in any sense an equivalent of medical instruction). Think how valuable for medical students courses in economics and psychology would be, drawn upon these lines. Social workers even talk of *socializing* the physicians and want to hasten the process.

There is room in the world for the nurse, for the occupation worker, and for that mainstay of reform, the competent secretarial aid. There is room for the woman technician in bacteriology and other sciences, and no one doubts that there is room for the social worker. It seems to me that we can say already on the basis of the didactic part of our Smith College-Boston State Hospital course that there is room for the psychiatric social worker too. How many family problems have a psychopath as their central figure and nucleus no one knows who has not done practical work in this zone of advance. The best of it all is that these women have not only preserved their interest in the family, but have developed a wish to meet the psychopath and as it were "grasp the nettle." As the refrain of one of the Smith College songs this summer ran —

Be it ever so normal,
There's no place like home!

III. THE COURSE IN SOCIAL PSYCHIATRY.

BY EDITH R. SPAULDING, M.D.,

DIRECTOR, PSYCHOPATHIC HOSPITAL, REFORMATORY, BEDFORD HILLS, NEW YORK.

It was not the intention of the training school to give to its students a complete course in psychiatry or to prepare them to diagnose or treat on their own responsibility the types of cases which were studied during the course. Its purpose was rather to teach the fundamental principles of human behavior both normal and abnormal, social and antisocial. With this end in view, the courses in psychology, sociology and social psychiatry all aimed to show the adjustment which is necessary if man's primitive instincts and desires are to find adequate and constructive outlet in the environment which modern civilization offers. The course in social psychiatry endeavored to show to what degree abnormal and antisocial behavior result from the inability to make such adjustment. Only those mental conditions were studied which have been found to be related to the war neuroses and psychoses.

The physicians who planned the course realized the responsibility of attempting in a period of eight weeks' time to teach a group of lay workers, without previous medical training, representing a wide range of ages, with a variety of educational backgrounds and various degrees of maturity, the principles of mental disease in as thorough a manner as it might be done in our best medical schools. However, when all things were weighed in the balance, it was felt that the time of a world war and the need which was already being felt in our country as well as in others for trained workers of this type to assist in the reconstruction of returned soldiers were sufficient reasons to justify a method of procedure which in other times and under less pressing needs might be considered a risk. In spite of the fact that lecturer after lecturer looked for symptoms of mental indigestion they found only unflagging enthusiasm and a high pitch of interested attention, and seemed to agree with the visitor at the State hospital who, on seeing the class file through the corridor and not knowing who they were, remarked that most of them looked perfectly normal!

The different points of view regarding the origin of mental disease were presented even at the risk of causing some confusion in the minds of the students. At the same time, an attempt was made to eliminate all superfluous prejudice and unnecessary controversy, that the students might be left free to accept whatever their previous experience and knowledge would permit. However,

the fact that they appreciated so keenly the type of men who lectured to them and the extent of their psychiatric training and experience unconsciously influenced them to overcome many of their resistances, thus allowing them to accept theories which, under other circumstances, would doubtless have taken a much longer time.

The school is particularly indebted to Dr. Houston, superintendent of the Northampton State Hospital, for so generously placing the facilities of the hospital at the disposal of students. The biweekly clinics which Dr. Houston held were one of the most important features of the course.

Ten and a half hours a week were devoted to lectures in psychiatry. This included two two-hour clinics at the hospital and five lectures, some of which were an hour and a half in duration. The public was invited to attend one of the five lectures which was scheduled for Tuesday evening of each week. An equal amount of reading was supposed to supplement the lectures of each course. Although this was not strictly enforced in the course in psychiatry, still much outside reading was actually accomplished. There were twenty-six visiting lecturers, all of whom were so co-operative in contributing a definite part of a prepared schedule that the series of lectures was scarcely less consecutive than if it had been given by a single individual, and perhaps more diversified and stimulating. We should be glad to take this opportunity to express to the physicians who gave their time so generously our appreciation of their enthusiastic assistance. During the last week we were particularly fortunate in having Captain Bott and Captain Farrar, who came from Canada to give us the benefit of their long experience with the war neuroses.

The general plan of the course was as follows:* —

First Week. — Physical causes of mental disease; demonstration by lantern slides of brain lesions; history taking and the mental and neurological examination of patients.

Second Week. — Epilepsy and the epileptic make-up.

Third Week. — Study of personality in general; hysteria, constitutional inferiority and psychopathic personalities.

Fourth Week. — Psychoneuroses.

Fifth Week. — Manic-depressive psychoses; alcoholism and the alcoholic psychoses.

Sixth Week. — Dementia præcox; paranoid states.

* A complete list of lecturers will be found on page 86.

Seventh and Eighth Weeks. — War neuroses and psychoses.

An important part of the course was a case history which each student was required to write according to the form given during the first week by Dr. Lowrey. It was suggested that the histories be autobiographies, but this was left to the discretion of the individual. Many did write about themselves and some were able to describe and understand the complexes which had been influential in forming the trend of their lives. Others chose to describe abnormal mental conditions occurring in friends or in relatives. As a result of their newly acquired knowledge they were better able to understand conditions with which in some instances they had struggled for a period of years. The majority of these histories, it may be of interest to add, would have done credit to any of our psychopathic hospitals.

In looking back over the course it seems scarcely credible that the class could have assimilated so much in so short a time. However, thanks to their continued interest and enthusiasm, even the hot weather did not seriously interfere with their output of energy and the accomplishment of their task. The greatest strain seems to have been the continual readjustment of all their past experience and knowledge to new standards. But even this was said to bring with it a sense of contentment greater than any that had been experienced previously. We hope that the majority of the group gained a more tolerant attitude and greater sympathy toward abnormal behavior in general, and an understanding of the fundamental principles which will underlie the conditions to be found in the war neuroses and psychoses.

The first part of the course has been largely theoretical. The practical work is to come in the six months that follow. The ultimate success of the course, however, depends largely on the further co-operation of the psychiatrists in recognizing the ability of these specially trained workers, in giving them sufficient scope in exercising their ingenuity and in helping them to apply the knowledge that they will have acquired during their eight months of training. Above all, it is to be hoped that these social workers and others to be trained later in similar courses will be of invaluable assistance in the field of mental hygiene which has even greater possibilities than that of the very imperative but more limited field of the reconstruction of the soldiers who will suffer from the war neuroses.

LIST OF LECTURERS.

- Dr. E. E. Southard, director, Boston Psychopathic Hospital.
 Dr. J. A. Houston, superintendent, Northampton State Hospital.
 Dr. Lawson G. Lowrey, Boston Psychopathic Hospital.
 Dr. Clarence O. Cheney, Psychiatric Institute, Ward's Island, New York City.
 Dr. Everett Flood, superintendent, Monson State Hospital for Epileptics, Palmer, Mass.
 Dr. William Healy, The Judge Baker Foundation, Boston.
 Dr. James J. Putnam, Boston.
 Dr. Abraham Myerson, Boston Psychopathic Hospital.
 Dr. L. Pierce Clark, New York City.
 Dr. Adolf Meyer, director, Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital, Baltimore.
 Dr. George S. Amsden, Bloomingdale Hospital, White Plains, New York.
 Dr. H. W. Frink, New York City.
 Dr. H. A. Harrington, Psychiatric Institute, Ward's Island, New York City.
 Dr. A. A. Brill, New York City.
 Dr. Albert M. Barrett, director, Psychopathic Hospital, Ann Arbor, Mich.
 Dr. Ray Lyman Wilbur, president, Leland Stanford University, California.
 Dr. H. W. Mitchell, superintendent, State Hospital, Warren, Pa.
 Dr. George H. Kirby, director, Psychiatric Institute, Ward's Island, New York City.
 Dr. Charles I. Lambert, Bloomingdale Hospital, White Plains, New York.
 Dr. T. H. Ames, New York City.
 Dr. Herbert Hall, Marblehead, Mass.
 Dr. Walter E. Fernald, superintendent, School for Feeble-minded, Waverley, Mass.
 Capt. A. E. Bott, Military School, Hart House, Toronto, Can.
 Capt. C. B. Farrar, Cobourg Military Hospital, Cobourg, Ontario, Can.
 Miss Betsey Libbey, Philadelphia Society for Organizing Charity.
 Miss Jessie Taft, director of social service, Committee on Mental Hygiene, New York State Charities Aid Association.
 Miss Anna King, executive secretary, home service, American Red Cross, Boston.
 Mr. George A. Hastings, executive secretary, Committee on Mental Hygiene, New York State Charities Aid Association.
 Dr. Josephine C. Foster, Boston Psychopathic Hospital.

IV. A SCIENTIFIC BASIS FOR TRAINING SOCIAL WORKERS.

BY F. STUART CHAPIN,

PROFESSOR OF SOCIOLOGY, SMITH COLLEGE.

It is small wonder that the vicissitudes of experience appear to the average person as a hopelessly disjointed sequence of chance events, but there is no excuse for an educational system to present knowledge as though each subject occupied a separate pigeonhole or an independent water-tight compartment in the scheme of things. And yet this is the impression that the great majority of students get. Our schools and colleges have presented the subject-matter of knowledge in such a way as to disguise effectively the real and essential relationships between history, psychology, economics, biology, etc. It is only the keener minds that make the astonishing discovery that these subjects are but different points of approach to the same common problem of human relations.

The social case-worker follows a routine of fact-getting that views one case after another, and each as a unique problem in itself to be treated on its own merits. Hence the tremendous importance of supplying case-workers-in-training with a sound knowledge of the solid mid-ground of fact and principle which runs through all social relations. The information thus gained gives the worker with individual cases a vantage ground from which to view disinterestedly and coolly the relation of her individual effort to the general effort. It is then discovered that one's individual effort, which had so often appeared detached and aimless, may be made vital and immensely significant as part of the greater collective effort which stretches back into the past and reaches forward toward the future. One learns to know that when individual effort is detached from the collective effort, a social reverberation is set up which often entails disastrous consequences. All this information and mental discipline may be supplied by a fundamental course in sociology.

A course in sociology becomes, therefore, a *sine qua non* of preparing case-workers by the method of the short, intensive training course of the kind given at Smith College. Yet, although sociology synthesizes the work of other fields, it helps to develop a sound perspective towards social relations chiefly because its own special and independent field of study is the discovery of principles which operate in the growth and change of social standards, customs and traditions, while applied sociology (or

social work) is the effort to prevent lapses from the prevailing standards of a time and place.

The economic aspects of our social problems usually appear fundamental, yet the searching analysis of psychiatrists as well as the sad experiences of social workers have demonstrated that below the surface of economic conditions lies the elusive psychological fact, and sociologists know that lower still may be found a stratum of biological fact and principle. The well-meaning social worker who underestimates the force of conventional standards of living and fails to solve her problem by economic means falls short because she neglects the momentum of custom and the psychological overlap of the past. Likewise, the energetic social reformer who legislates to restrict the employment of married women at confinement is likely to leave out of his reckoning the social reverberation of the law as seen in its deterrent influence on marriage and above all its discouragement of childbearing on the part of healthy married women who do work.

Social workers and social reformers need more of that "animated moderation" which comes from a knowledge of scientific method and scientific perspective towards action. The disinterested search for truth, the chief characteristic of the scientific method in action, may become fundamental in social work without loss of that sympathetic personal touch which has been the great contribution of the art of social amelioration. Ruling out the "uplifters," serious social work must, on the one hand, lift its eyes from the routine of simple fact-getting to the obligation as well as the promise of a more complete scientific method, and, on the other hand, must learn to cultivate a "noble discontent" with legislative action that is not intelligently checked up by impartial observation and thorough study of its consequences. Social case-workers become applied sociologists as soon as they cease to view their "cases" as a chance sequence of detached events and come to regard them as more than unique problems to be sympathetically and wisely solved, to view them indeed as scientific facts of observation contributed to the mass of trustworthy data which is some day to be assembled, classified and its true meaning formulated into some social law of universal validity.

It was an ambitious idea to endeavor by short-cut methods packed into two scant months of lecture, discussion and reading to develop such a point of view among our students. But the attempt was made. The stimulus of war-time needs and the ideals

of social service, combined with the novelty of the plan and the unusual intellectual interest of the subject, conspired to originate at the start and to maintain without slump during the entire period a high enough morale among students and teachers to make the effort successful.

A sound knowledge of the biological backgrounds of modern community problems impresses upon social workers the tremendous importance of the hereditary equipment of the individual — for example, congenital feeble-mindedness — and guards her against sentimental and unscientific methods which might tolerate the marriage and hence the multiplication of a type of person innately incapable of conformity to prevailing social standards. But instincts also are part of our native equipment and since instincts are the result of selection far back in the past of the race, they do not adapt men to the obligations and responsibilities of modern life and other conditions set by the restraining influence of custom. This state of affairs is reflected in the frequent mental conflict and social maladjustment of those who are in distress.

Thus the environment of a "case" is far more than its economic surroundings — it consists also of the social atmosphere of the community, a psychological background of prevailing standards, customs and traditions. Individual and collective effort that fails to appreciate that all economic and industrial phases of a problem have their backgrounds, basis and foregrounds in biologic and psychologic facts is likely to set going a train of far-reaching consequences that get beyond control. Hence all responsible individual and collective effort in the service of humanity must be based on knowledge derived from the use of those three principles of science, invariable for all fields of study — disinterested observation, systematic classification and inductive generalization.

In conclusion, then, the chief contribution of the Smith School from the point of view of sociology has been the satisfactory demonstration that training for social case-work may be based on scientific method rather than on philanthropic technique. The practical value and inspiration of such a discipline was abundantly proven by the testimony of experienced social workers who attended the school.

V. AN EMERGENCY COURSE IN A NEW BRANCH OF SOCIAL WORK.

BY MARY C. JARRETT,

CHIEF OF SOCIAL SERVICE, BOSTON PSYCHOPATHIC HOSPITAL.

There are two main features of interest to the social worker in the Training School of Psychiatric Social Work, held at Smith College this summer, from the point of view of development in social work: (1) the fact that the course is preparation for a new field of work for which no formal training had previously been attempted, and (2) the use of a new method of instruction by which the didactic work and practical work are given separately, one-fourth of the course, or two months, being given to intensive instruction by lectures and clinics, and three-fourths, or six months, to practice under direction.

In the past all training for psychiatric social work has been by the method of experience. The only attempt at systematic training was an apprentice course offered by the social service of the Boston Psychopathic Hospital to six or seven students at a time. The demand for especially trained social workers in this field has been far greater than the supply. The approaching problems of war neuroses made it clear that emergency training should be undertaken. The services of social workers in the care of mental and nervous patients, proved indispensable on a small scale here and there in civilian hospitals, would evidently be required on a large scale in the reconstruction program for military cases.

The plan of dividing the didactic and practical portions of the course was suggested as a practical necessity, for no one city could offer adequate opportunities for practice to forty or fifty students at once. The students of the training school are now assigned to hospitals and social agencies in four cities: Baltimore, Philadelphia, New York and Boston. It is a question whether the method may not be theoretically as well as practically good, for there was distinctly an advantage, for acquiring both information and morale, in the intense concentration and application possible in a quiet, somewhat remote place like Northampton. The didactic instruction is to be continued to some extent throughout the period of practical work, through weekly or biweekly meetings of the students in each city with lectures from physicians and social workers.

Another matter of interest to the social worker is the general recognition of the importance of social work to the practice of psychiatry implied in the fact that the course was given under the auspices of The National Committee for Mental Hygiene and shown by the cordial co-operation of the large number of eminent physicians who came to lecture to the school.

The undertaking of training for social work by a great women's college such as Smith is significant of a growing belief that social work is tending to become a profession that will eventually demand academic and practical training comparable with education now required for the established professions. The students called out by the course made a high average in intellectual capacity. Forty-three were college graduates, the other twenty had been well educated in other ways, while four had done graduate work. They represented twenty colleges and came from twenty-one States. Ten were social workers who had done the required practical work and have received certificates for completion of the course. Forty-seven are now getting their practical work in thirteen different hospitals and social agencies under trained social supervisors.

During the period of practice the students will be grounded in methods of social case-work. Preparatory instruction covered the relation of social work to sociology and psychiatry, and the general technique of social case-work with some reference to special psychiatric problems.

Either in civil or military work, graduates of the school should be fitted (1) to secure social histories required for medical diagnosis, (2) to assist in the re-education of patients in hospital if pressure of work upon the physicians makes such lay assistance desirable, and (3) to undertake the social readjustment of discharged patients.

SUGGESTIONS IN THE NOMENCLATURE OF THE FEEBLE-MINDEDNESSES.

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The First Epistle to the Thessalonians asks us, in Tindale's version of 1534, to "Comforte the feble mynded" (5:14). Upon looking at the original Greek, however, it would seem that St. Paul had reference rather to faintheartedness than to feeble-mindedness in the modern sense of the term. In point of fact, the term imbecile, in its modern connotation of limited intelligence, was in much more frequent use at an early date than the term feeble-mindedness, and the term imbecile was certainly in far less frequent usage for the poor in intelligence than the term idiot. De Quincey, in 1846, for example, puts the term imbecile in quotation marks, remarking of a person that he "had the misfortune to be 'imbecile' . . . in fact, he was partially an idiot."

It would be a pretty inquiry, and one which would reflect in a delicate way the progress of mental hygiene, to study the history of these three terms — idiot, imbecile and feeble-minded — down to modern times. Murray cites the "Daily News" of 1892 as still putting the term "feeble-minded" in quotation marks. Feebleness of mind in the early usage of the term certainly did not restrict itself to the intellect. Imbecile was a term almost equally appropriate to the body as to the mind. The original significance of the term idiot is not at all close to the meaning of the present day. However, very early in the history of modern English, a man could will something to his "idiot," meaning thereby his fool.

I have no design here to discuss the history of these terms. Suffice it to say, the term idiocy appears to be the most deeply established of all three terms. The term imbecile is now a close second thereto. As to the term feeble-minded, a term still in some doubt as to whether it should undertake to spread over imbeciles and idiots as well as over the feeble-minded "proper," American and English usages are not at one in the matter. I fancy that lay American usage would agree with lay professional English usage. If one as a layman spoke of a feeble-minded person, he would probably not mean an imbecile and would

almost certainly not mean an idiot. Yet the search for an inclusive term for idiots, imbeciles and the feeble-minded proper has been a constant one.

In the public service and in legislative documents, provision for the feeble-minded has come to signify provision not only for the feeble-minded proper in the English sense but for imbeciles and idiots. In fact, I think there can be no doubt that the natural euphemistic tendency of man (this tendency ought to be subject to keen psychological analysis by some one after the war) has tended to the overuse of the term feeble-minded simply because the terms imbecile and idiot seem too strong to employ. One did not care to call a spade a spade particularly when by skillful work the instrument could be made into something higher and better; in short, schools rather than asylums for the feeble-minded, including imbeciles and idiots, were founded under the influence of their great teacher and promoter, Séguin. By these schools it was hoped so to improve these wards of the State that they would be self-supporting or even in some instances capable of citizenship. Moreover, these promises were well met now and again. The medical and educational professions doubtless never went so far as the laity in their hopes. However, it was always easier to wring from the unwilling public purse money for a school than for a custodial building.

Now, with the progress of the world, even the term feeble-minded has become much too strong a term to use of many persons whom we tend to put together as subnormal. It is all very well to term imbeciles and idiots simply more and more pronounced and maximal examples of feeble-mindedness. There is a certain logical justification for supposing all three of these groups, idiocy, imbecility and feeble-mindedness proper, to fall into a quantitative scale from intelligence almost zero up to a stage corresponding roughly with late childhood or early adolescence. But what about persons whose mental tests and whose general worldly capacities signify that they are only slightly subnormal? What a shock to the layman's mind to hear these slightly substandard persons termed feeble-minded! How little their brains in general appearance are removed from normality! How apt we are to think that by a slight turn of the endocrine glands, by another twisting of the wheel of fortune, or by a little more intensive education, these substandard persons could be made proper inhabitants of the world, proper voters, proper parents! Moreover, do not the mental tests, if they signify any-

thing, indicate for some of these substandard persons that they are not at all below the subaverage subjects that we are willing to call normal? That layman who makes a profession of being such and is most intensively a layman, namely, the social worker, is equally at a loss. Nor can we omit to observe a number of lawyers and even judges floundering in a morass of doubt, when it comes to calling these slightly substandard subjects "feeble-minded."

In short, is it not a truism in modern mental hygiene to say that there is now a new group of (as it were) superfeeble-minded above the group of the feeble-minded proper and far above the imbeciles and idiots? In short, on the psychometric basis and on the basis of everyday accomplishment in the world, do we not acknowledge that substandard persons, definitely below the range of the normal and probably incapable of reaching normality, fall into four compartments? To be sure, these compartments intergrade with one another so that one could not say where one leaves off and another begins. These intergrades are often possible to the extent of our admitting low, middle and high idiots, low, middle and high imbeciles, low, middle and high morons (as the feeble-minded "proper," owing to the neat verbal contribution of Goddard, are now called). Whether any one would desire to distinguish these persons that lie between the morons below and the normals above into three such groups, I question; but with finer diagnosis doubtless that distinction may be arrived at.

Accordingly, we now distinguish idiots, imbeciles, morons and a subnormal group as yet unnamed. We distinguish idiocy, imbecility, moronity (if this somewhat barbarous abstract term be allowed; it is preferred for lack of a better by many specialists), and the fourth unnamed kind of abnormality.

I want to argue for a new term to cover not merely the unnamed slight degree of subnormality which lies above feeble-mindedness proper, but a term which shall cover all of the feeble-mindednesses. I want to propose a term which shall include idiocy, imbecility, moronity and any other forms of subnormality of intelligence which may be described. The literature is filled with the wreckage of such terms. I need only refer to David Hosack's book, "System of Practical Nosology," published in 1819, wherein *amentia* (De Sauvages), *morosis* (Linnæus), *stupiditas*, *amentia* (Vogel), *amentia* (Sagar), *amentia* (Cullen), *fatuitas* (Crichton), *idiotismus* (Pinel), *amentia* (Hosack) appear. From such a list

it might well appear that the term *amentia* ought to be the term of election, and that term has been favored by many English writers. Owing to the proposals of Meynert concerning an acute mental disease characterized by the temporary loss of sundry faculties, the term *amentia* has, in American usage at all events, not been confirmed. In some ways I would wish that it could have been confirmed, though both *amentia* and its companion term *dementia* are subject to somewhat graver doubts than many other terms in psychiatry. Partly the usage by Meynert and partly the difficulty in quickly catching by the ear whether one is referring to *amentia* or *dementia*, will probably lead to its lack of permanent establishment in the literature, although I for one would rather like to be able to use the terms *ament* and *dement* under appropriate conditions.

Latterly, Kraepelin has proposed the term *oligophrenia*, and in a long chapter in his last edition he describes all forms of idiocy, imbecility and feeble-mindedness under this term. There is, I believe, a slight postclassical Greek justification for the use of the term; still the prefix *oligo-* ought to refer to number, and the phrase ought to mean "few mindedness" rather than feeble-mindedness. The only term in common usage with this prefix *oligo-* is the term *oligarchy*, which, in contradistinction to monarchy and democracy is a term that has come to stay. The connotation "few" rather than the connotation "slight" has certainly been attached to the prefix *oligo-*, and the denotation of this prefix is that of number. It should certainly be used under conditions where the cardinal number of elements is diminished by so and so many units.

There are no such rigid rules to which one need conform in medical nomenclature as in botanical and zoölogical nomenclature. Kraepelin's choice of *oligophrenia* is one of a long list of such choices by various eminent alienists. It seems to me that the term will not survive against the denotation and the usual connotation of the prefix *oligo-* therein. Kraepelin, it is to be regretted, has not been especially happy in the choice of terms for those syntheses of diseases which he has attempted to make. One cannot concede with pleasure — I doubt if we can concede at all — that the term manic-depressive and the term *dementia præcox* will survive a century. It would seem that Kraepelin has tried to make viable in some of his chosen terms certain features of the diseases that he has attempted to synthesize and has produced terms often both ungainly and inaccurate.

The deuterotheme of Kraepelin's term, namely, *-phrenia*, has a much happier suggestion. This term in the Greek usage appears pretty constantly to refer to the intellect rather than to the emotions and the will. We see being built up in psychiatric nomenclature a tendency to using as the themes of new terms for diseases that acquire a modern alignment the following deuterothemes! *-phrenia*, *-thymia*, *-boulia*. These terms are used for the intellect, the emotions and the will respectively. I think we can hardly do better than try to put the stamp of general approval upon the use of these themes in new terms, provided that we have nothing better to substitute for the corresponding old divisions of the mind into intellect, emotions and will, into thinking, feeling and doing.

As for the protothemes in psychiatric nomenclature, we have long had at our disposal the Greek *hyper-*, *hypo-*, *a-*, *para-*, to signify respectively degrees of alterations of disorder. Hardly any psychiatrist can fail to have been impressed with the logically beautiful usage of these prefixes by Wernicke, and his use of the prefixes was palpably borrowed from the general usage of neurologists to indicate degrees, for example, of sensory disorder (hyperesthesia, hypæsthesia, anæsthesia). Accordingly we could construct the following table by combining these prepositional prefixes with the deuterothemes above mentioned, and in so doing we should do hardly any violence to modern tendencies in nomenclature.

| | |
|---------------------|---------------------|
| Hyperphrenia. | <i>Hypophrenia.</i> |
| Aphrenia. | <i>Paraphrenia.</i> |
| <i>Hyperthymia.</i> | Hypothymia. |
| Athymia. | <i>Parathymia.</i> |
| Hyperboulia. | <i>Hypoboulia.</i> |
| <i>Aboulia.</i> | Paraboulia. |

I have italicized in the above table terms which either have come into common use or might as well come into common use. Inasmuch as most mental disorders run to diminution rather than to excess, hyperphrenia and hyperboulia will prove less useful in nomenclature. Possibly hyperphrenia might refer to intellectual geniuses.

In this note I have no idea of offering a complete nomenclature for psychiatrists; in fact, it would seem to me that the points made are quite obvious and wholly in the order of the day. But I would like to emphasize the great value of the Hellenic nomen-

clature on account of its neatness, its present usage, and its capacity of exact definition.

Is not the term hypophrenia one quite at our hand for any and all degrees of feeble-mindedness? The term on account of the intellectual significance of the ending *-phrenia* will pin us down practically to the psychometric or intelligence-tested group, so important in modern school, court, hospital, dispensary and other social circles.

By the use of the term hypophrenia and its adjective hypophrenic, we shall avoid making the invidious suggestion that a subject is a moron when what we mean is that he is merely slightly subnormal and really a supermoron, or, as some one has suggested, a sophomoron. In court, in school, in hospital wards, in out-patient consulting rooms, our lack of tact sometimes permits us to speak of sundry persons as feeble-minded when they are above the grade to which that term is ordinarily assigned. Is it not better to adopt a Hellenic term constructed in consonance with modern nomenclatural tendencies — a neat, brief term capable of exact definition and without any invidious or damaging connotation? Week after week it seems to me I have seen physicians and others quite lose their *rapport* both with relatives and with patients, when the term feeble-minded is imported into the discussion. Nowadays we are demonstrating mental disease and defect to students in training, to psychological workers, to social workers, to court workers, to school teachers, and indeed to the laity at large. Will it not be better for us to adopt a term with an exact denotation and without injurious connotation?

I therefore suggest, as in certain previous papers, the term hypophrenia for the various feeble-mindednesses both (a) slight subnormalities, (b) feeble-mindedness proper or moronity, (c) imbecility, (d) idiocy. For the art or science dealing with the hypophrenias I would propose the term hypophrenics. Other compounds and usages will readily suggest themselves. The various hypophrenias form as it were the genera in the order of the feeble-mindednesses.

THE EMPATHIC INDEX IN THE DIAGNOSIS OF MENTAL DISEASES.

BY E. E. SOUTHARD.

It is safe to say that *Ego* and *Alter* are about as far away from each other as ever. The *Socii*^{1, 2} are not thoroughly explained on consciousness of kind.³ There is much that points to the downfall of the economic man or of any other Humpty-Dumpty type built more on identities than differences. The whole brood of the humdrummers who take men and women as sufficiently alike for all practical purposes is a brood bound to degenerate and die out. I have even read in a book on "Guild Socialism"⁴ that provision would be made for geniuses in the regenerate world, though I must say there was less to the point concerning the insane and the feeble-minded. A little more attention to *Ego* and *Alter*, perhaps more especially to *Ego* and its types (*e.g.*, by thinking one's own selves over in the memory procession), would do both the capitalist and the socialist humdrummers a vast lot of good.

The immediate object of this paper is hardly to contribute much to the large question of human interest, the interest the *Socii* are found to take in each other and then translate into action. I wish to borrow from æsthetics and psychology a term for this human interest, a term coined, I believe, by Titchener, viz., *empathy*.⁵ I wish to study our relations of empathy with the pronounced psychopaths, hoping to gather therefrom some points of service in the larger matter of human interest in the Fellow in general. The term *empathy*, happy though it seems, is not at all the real issue. The term itself was built up designedly on the analogy of the term *sympathy*. I seek to set forth what I conceive to be implicitly recognized by all, viz., that there is an attitude of empathy quite distinct from the attitude of sympathy. The world takes, in criminals, or in races or nations, a human interest often termed *sympathy* but actually of another sort.

The existence of this human interest or empathy depends on how far we *read or feel ourselves into* the person, group, nation, or race. I say "*read or feel into*" instead of "*in*", so that by doing a little violence to the idiom the interior aspect of the process may be stressed. This process is one of empathy, not always of sympathy. Sympathy itself is of course an ancient

and beautiful term. Sympathy meant feeling with another, like feeling, — but the feeling *with* did not always mean a translation *into*, nor did likeness go so far as identification. In fact the sympathetic person was often chargeable with being a bit superior to the person sympathized with. *Sympathetic*, the adjective, seems to have built up — so philologists say — on the analogy of *pathetic*: that is, *sympathetic* ought to be *sympathic*, as indeed in some languages it becomes. And a little of the *pathos* of *pathetic* has usually clung to *sympathetic*. As for empathy, however, the adjective *empathic* seems to be more suitable than *empathetic*, if only because the latter would even more damagingly suggest pathos.

Sympathies and empathies may occur together or apart. Perhaps more often they occur apart. We sympathize, we say, with the sorrows of Belgium. But it is a question how thoroughly we *empathize* with the Belgians, how thoroughly we can, here and now in America, read or feel ourselves into their plight. We have not memories enough for that level of imagination. Emotional attitude is perhaps the most important part of sympathy. Quite another thing is that effort of imagination and that assumption of a conscious attitude which are required in empathy.

We do not sympathize with the considerable sorrows of Germany, say of the Kaiser. Can we not empathize in their situation? Can we not readily hark back to perhaps our selfish childhood (or to the selfish childhood or youth of some other) and read ourselves (or at one remove) into the Teutonic situation?

Germany says she is defending herself. Do we sympathize with her? Yes, perhaps, whether we think she is defending herself or whether we think she merely thinks she is defending herself. The sympathy is an emotional attitude which we do or do not assume. How many Americans can really empathize the Teutonic defense-reaction? How many can read or feel themselves into that felt passivity? Yet, if diplomats do not, the peace negotiations will be for long at cross-purposes.

But what sort of process is empathy? It is obviously not a mere sensation or a mere pleasure-pain feeling. Historically, the idea took definite shape in connection with certain illusions of space perception and certain æsthetic reactions. It can hardly be a mere process of association, except in some very broad sense of that term. Empathy must clearly bear some relation to one's power of imagination. Is it emotional? If we can realize our-

selves in other persons, races, or even animals or inanimate objects, clearly a good deal of kinesthetic "set" will be brought about, and there may well be emotion set free or modified.

It is plainly desirable at this point to look more narrowly into the usage and value of the idea, in which I shall follow Titchener. Thereafter, I shall try to state what different empathies the psychopathic types of person make in us, largely as a practical matter of diagnostic aid, but with an eye on more general implications.

Titchener's first reference to empathy is to its possibly explaining certain spatial perceptive illusions, *e.g.*, illusions of the Müller-Lyre type. By an empathic process we are conceived to read ideas into the figures. "We read ourselves, or feel ourselves, into the lines of the figure." "We tend, just because we are human beings, to humanize the forms about us; a column seems, according to its proportions, to stretch up easily to its load, or to plant itself doggedly under a too heavy pressure, — precisely as a man might do." With respect to the special problem of the spatial illusion-figures, to be sure, Titchener prefers to explain them chiefly on another ground, *viz.*, that of physiological mechanism expressed in eye-movements, "tempted" as he somewhat teleologically says, to continue beyond their proper point or, on the other hand, "checked." However the general theory of spatial illusions may stand, empathy in the sense of the reading-in of associated ideas (*Einfühlung* of Lipps⁶) is at least a subordinate factor in most instances, and the general disposition or "cortical set" is another such operative though subordinate factor.

Empathy is, however, far more than a subordinate factor in attitudes taken merely to space perceptions of visual nature. Empathy, as Titchener more generally defines it, is the name given to "the process of humanizing objects, of reading or feeling ourselves into them." Empathic processes are prominent in visual imagination, not necessarily as primary features, but as attendant, supplementary, interfusing processes.⁷ One of Titchener's observers reported, as to his image of a fish, "*cool, pleasant sensations all up my arms; slippery feeling in my throat; coolness in my eyes; the object spreads all over me and I over it; it is not referred to me, but I belong to it.*" This fish-image was an "image of imagination," not a "memory-image," to use Titchener's distinction. The fish-image was here *not* aroused with personal reference to definite fishing-excursions of the past. Set before a blank wall, the observer did *not* rove with his eyes, move restlessly, and strive to bring up filmy and vaporous past memories,

sometimes losing his visual imagery altogether and filling out the gaps by assuming fisherman's movements or even imitating the motor dodges of the fish itself. On the other hand, the observer was in a state of motor quiescence, fixated the fish steadily on the blank wall, and got a substantial, three-dimensional, perhaps appropriately colored object in imagination, a new, strange, unremembered, personally detached, imaginary fish — to which were added the empathic associations "spreads over me and I over it," etc.

The imagined fish, thus solid, stable, and empathically supported, now stands at the focus of consciousness. Shortly all sorts of meaning may enter (the fish or *'Ιχθύς* of Christian theology, the sacred codfish of Massachusetts, or even some reference to the observer's old fisherman's luck of some past day); but all these meanings and references are aside from the image and represent merely a bit more of the flow of consciousness. The fish-image may even start a train of feelings of bodily discomfort and leave a kinesthetic sequel quite as marked as any got by telling a *true* fish-story. But, as is well known, *true* fish-stories rarely do get told, so mobile, foamy, and unsubstantial are the memories of any fisherman. How much easier it is, even if you are a poor fisherman or no fisherman at all, to sit down and build an immobile, firm-fleshed, and solid fish-image, the perfect basis for a glorious yarn.

One may thus, with Titchener, prefer an active to a passive account of the imaginative consciousness.⁵ The imaginer plans, molds, constructs, works up, applies skilled labor — the emotive side of the process being all the while rather vague and pretty much a matter of general disposition. Indeed there may be, according to Titchener, more emotion attached to the varying success or failure of the process itself (whether one is achieving a trout or a hornpout, though this is not Titchener's example) than any emotion intrinsically related to the fish-image itself. And "meanwhile, also, all sorts of empathic complexes have formed about the focal processes, vivifying and personalizing the partial products of the constructive effort" — an effect of the constantly integrative tendency of consciousness along the specific lines of the imaginer's disposition, capacity and experience.

But empathy is not merely a process of humanizing visual perceptions or visual imagery. One may "empathize," if this term be allowed, in respect to many non-visual matters. Titchener himself speaks of *motor* empathy.⁵ This was in the matter of so-called "imageless thought" and the analysis of James' feel-

ings of relation. The polemic is here of no consequence. James had urged that "we ought to say a feeling of *and*, a feeling of *if*, a feeling of *but*, and a feeling of *by*, quite as readily as we say a feeling of *blue* or a feeling of *cold*." Titchener thinks not, and finds that, though the feelings of relation occur and can be got out in isolation and at full strength, they are really not elementary processes, but are kinesthetic complexes.⁶ They are perhaps reduced, degenerate, vestigial remains of ancestral motor attitudes.^{7, 8, 9} According to Titchener,¹⁰ "in the author's experience, the feelings of relation are never simple. They are matters of motor empathy; the relation is acted out, though in imaginal rather than in sensory terms." He goes on to say, "sometimes the kinesthetic images are accompanied by a visual image, itself usually symbolic; sometimes they are strongly colored by pleasantness-unpleasantness." It is worth while pointing out that neither the symbolic nor the emotional components here are necessary parts of the empathic process taken in and for itself.

Empathy, it is plain, is more intellectual than emotional. Though empathy readily leads the sympathies, it may well stop at a coldly rational view of its object, pleasing only because it fits the thinker's general views and habits. The human interest of sundry newspaper stories is often a matter of empathy rather than sympathy. There is an emotion, the sort of emotion, namely, that human interest and will imply, but this need not be connected in the slightest with any genuine altruistic feeling¹¹ or sympathy for the heroine or villain of the headlines. But is not this a greatly extended interpretation of the term *empathy*? Should it not be limited to æsthetics and art education, in accordance with the initial usage of *Einfühlung* in Lipps' *Raumesthetik* in 1897; or as popularized by Münsterberg in his "Principles of Art Education" in 1905? Vernon Lee gives in a small book the stock examples of empathy, devoting no less than two chapters to the topic; and numerous illustrations are given by Vernon Lee and Anstruther-Thomson. But the idea of *Einfühlung* and the ideas involved in the somewhat greater term *empathy* devised by Titchener are clearly not to be impounded for art alone.

In fact, a moment's reflection will show how many motives in human thought are implied in this idea of reading or feeling oneself into an object. Clearly animism is often a kind of empathy, in which one perceives in other men, animals, plants, natural phenomena, and a variety of objects a personalizing or personifying factor, namely, the soul. In fact, much of the wide

sweep of many philosophical doctrines is in one sense based on reading oneself into portions or the whole of the world. Hylozoism has its empathic suggestion. The Leibnitzian monads are not innocent of the charge. The whole question of immanence and transcendence has some bearing on the point. Ancient doctrines of magic, of fetishism, of nature worship, of shamanism are not unrelated. Anthropomorphism and sundry theological problems in personality lead in the same direction. Whether in more modern days the polemic of Avenarius against all introjection theories of Berkeleian type has something to do with the empathy problem, I may leave to specialists in Avenarius. The interesting term *eject*, contrived by Clifford for some one else's thought in the terms of a thinker's unconsciousness, was employed by Romanes, and we may safely regard this eject idea as closely related to our topic.

Still more modernly speaking, we might inquire how far empathy is related with the concept now identified with the Freudians, namely, that of narcissism, sometimes abbreviated to narcism. This term, apparently chosen by Näcke upon a suggestion of Havelock Ellis, and considered for the first time elaborately by a Freudian, Rank, in 1911 (also by Freud, 1914), is a conceived state or phase of development in which a child regards everything in relation to himself and not as related with other things. According to the Freudian doctrine of successive phases of development in human life, the narcissic phase follows the auto-erotic phase and precedes (perhaps somewhat fuses with) the homosexual phase that antedates the so-called achievement of heterosexuality. But what is narcism if not a species of reading or feeling oneself into an object or objects, in such an intimate fashion that the surrounding environment is virtually taken as a part of the self? But if it be a poor sort of empathy which leads oneself only to approve, appreciate, and fraternize with oneself, then the higher homosexual phase even more certainly looks like a form of empathy, a form in which, so to say, the Narcissus Ego discovers in some Alter something into which he reads, feels or empathizes himself.

So much may serve to indicate the wealth of philosophical and psychological ideas that flow in and about this notion of empathy. Though the concept at first sight seems a very special concept of æsthetics and largely dependent upon kinesthesia, empathy eventually spins a web of relations with all sorts of philosophical concepts from solipsism, on the one hand, to pantheism on the other. It is not too much to say that ideas of

this sort stick very deeply into life, and that the whole front that we present in our practical human interests (such as the time-honored question of egoism and altruism) depends upon what stand we take on this matter of reading oneself into another object.

Man has the defects of his virtues, and, by virtue of becoming complex, has run the danger of a variety of losses and twists that lower forms of life escape. By becoming complex in physico-chemical structure, the brain (to say nothing of all the auxiliary organs and tissues that supply it with energy in one form or other) has run the danger of diseases and defects that we psychopathologists think cause a large minority, if not a majority, of human ills. Suppose it could be shown that the Hohenzollern, on the one hand, or the Bolsheviki, on the other, were actually victims of psychopathic defect: Would it not profit the world to gain a deeper understanding of psychopathy and a quicker capacity for catching its signs? In fact, some psychopathologists believe that a keener sense of the psychopathic on the part of the world will do away with many of the evils of false leadership that now drag us down.

How shall the world gain this keener sense of the psychopathic in its members, especially in its leaders? One touch of nature makes the whole world kin, and the empathic index for these kindred fellows is clearly high. We read ourselves or feel ourselves into these kindred persons on the basis of their resemblance to us — their touches of nature. I think, therefore, we should initiate researches upon this matter of empathy in the psychopathic. That is, we ought to study, for eventual transfer to our normal fellows, the extent to which we can read or feel ourselves into the frankly insane or psychopathic. Analyze as we may by the finest technical methods the different parts of the mental life, and enumerate and measure as we may these elements and compounds in the psyche, we shall not readily get out of these *disjecta membra* of the mind any standard of normality for our patients. In fact, the psychologists can amply show, in the regions thus far subjected to the experimental method, that the psychopathic patient falls in his reactions well within normal curves of distribution. In fact, the metric psychologist too often believes that there is no special psychopathic problem from the standpoint of psychology. This view is much like that of a physiologist who might conceive that all the problems of pathology could be solved by physiological methods. Meantime, the sciences of pathology and of psychopathology exist and unfold.

Should we not, then, make some use of the offhand and global view of a man which a reasonably normal fellow finds himself to possess? When the psychiatrist operates medico-legally as an alienist in court, he is quickly made aware by the questions of the attorneys on both sides, by the attitude of the jurymen, and even by the questions and rulings of the court, that much depends upon the reading of the self (by the attorneys, jurymen, or judges) into the plaintiffs and defendants. What we here do practically, ought to be studied theoretically.

Upon what should we rely? The so-called unconscious of the diagnostician, or his conscious reasoning power? Decidedly, so far as possible, the latter. Provided that a man has a right to be a psychiatrist at all, he is probably able to empathize successfully, — make a Cliffordian eject of his fellowman, homologize himself with this man, animate him, as it were, with his own type of soul, and see his own reflection in his fellow in difficulties. Of course, there are plenty of perfectly shrewd and keen persons who belong, let us say, more in surgery than in psychiatry, — the men who analyze and perform well, but who are not supreme in synthesis. Rather than be a shrewd but non-synthetic unit, I personally should somewhat prefer, if I were going to be a psychiatrist, to be a simple type of person. I should want to be a rather naïve person, who could rely upon his judgments as uncolored by prejudice (save by native and communal prejudices: ideals of the tribe or of the market-place), and who could make a judgment of his fellow man pretty well in accordance with what the Freudians conceal in their term *Unconscious*. In short, though it is finer to be synthetic than to be naïve, it may prove practically better to be naïve than to be analytic. (Perhaps this digression may explain the odd and generally recognized fact that psychiatry is divided amongst rather naïve and inexplicably simple representatives and other men of extraordinarily complex and ratiocinative persons. Accordingly, a research in the empathic index of psychopathic persons as considered by psychiatrists would have to take into account the psychiatrist himself and possibly load the results of the research one way or the other according to the capacity of the examiner.)

How far, then, can we and do we read ourselves into the insane and psychopathic? For the moment, I have no plan of presenting set statistics on the matter, although we have been collecting some data at the Psychopathic Hospital along the line. The point of this paper will, on the other hand, be to bring out the general nature of the problem by considering some rather obvious

features in the clinical diagnosis of certain genera in the great groups of mental disease.

In approaching the psychopathic, the psychiatrist may put the question about empathy in a variety of ways. Following is a small number among the probably infinite variety of ways in which the question may be put: —

How far can you read or feel yourself into the patient?

Can you identify yourself with the patient?

Disregarding your sympathies and abhorrences, can you empathize with the patient?

Reversing the “giftie” proverbially craved, can you see the “ither” as you see “yersel,” *i.e.*, can you see yourself acting under some circumstances precisely as he is acting?

Can you put yourself in his place?

Conceding *nil* absolutely *alienum*, can you see the patient, not as similar to you merely, but as identical with you in your probable reactions?

Is the likeness to your own probable reactions specific rather than generic?

Does this patient’s reaction seem intrinsically human or is there something extrinsic and non-human about the reaction?

Is this “just what a child would do?” (if so, empathic test positive, because each of us readily empathizes with a child).

Is this “the touch of nature?” (Empathic test positive, because empathy is precisely making the world kin.)

Is this “just what any one would do?” (Empathic test positive.)

Is this “just what I would do if I were sick?” (Empathic test positive.)

Is this “just what I would do if I were crazy?” (Empathic test probably positive, because most of us early contrive an idea how it would be to be crazy, an idea usually built on lines of our own, *i.e.*, normal experience.)

There are some eleven major groups of mental diseases, according to an analysis of Psychopathic Hospital material recently made. I shall speak with injurious brevity concerning the empathic test or index in these groups. I have throughout spoken of the empathic index because I feel that in the long run degrees of empathy would be established for many diseases and that the question “How far can one empathize” will eventually be susceptible to a metric or at all events an ordinal division. For practical purposes in our work so far, the answers concerning empathy reduce for the most part to positive and negative. I

do or do not empathize with this particular patient. Now my view is that the empathic test is an indicator or index of diagnosis between certain groups of mental diseases and indeed amongst the subdivisions of certain groups.

Adopting for convenience the diagnostic order above referred to, I would proceed to Group I, the syphilopsychoses, or mental diseases of the syphilitic group. By and large, the psychiatrist and the layman will empathize positively with respect to most of the syphilopsychoses. So far as the meningitic, vascular and gummatous cases are concerned the mental symptoms are usually so little in evidence in many instances, that the examiner treats the case as "sick" in the sense of ordinary somatic disease and he sees nothing in a patient's reactions with which he cannot fully empathize.

With respect to general paresis, it might be inquired whether at least the excited and grandiose phase of general paresis would not show a low empathic index. The demented and depressive types of paresis do not excite one's feelings of a lack of empathy. Dementia may not excite empathic feelings in us one way or another, just by reason of the lack of reaction. The abysmal depth of depression that we sometimes find in the paretic remains nevertheless often quite empathic with us normal beings. The depression is merely exceedingly deep, but is, after all, just such a depression as one might feel.

But is it not probable that the grandiosity of the excited paretic shall afford instances of negative empathy? On the whole, I do not find that my own empathy is, as a rule, low for this paretic megalomania. Possibly my negative judgment is disarmed by the facial expression and whole motor attitude of the paretic, which is likely to be perfectly consonant with the grandeur felt, also I perceive that the paretic is physically sick and tremulous, and with it all any tendency to a negative empathy is pooled in the idea that after all this, though quite out of the ordinary range, may nevertheless run quite in the normal direction of feelings possible to the normal man under certain circumstances.

With respect to Group II, the feeble-mindednesses (or what I have tried to term the hypophrenoses), I find the empathic community of feeling is distinctly present in the majority of us. To be sure, some of the idiots and low imbeciles, with set expressions of a gargoyle nature, may give a negative empathy. It may be that throughout the hypophrenic group, our sympathies are so much in play that it is difficult to make a cold-blooded rational

reaction, such as the true empathic decision must be. On the whole, the reactions of the feeble-minded, both singly and in groups, strike the observer as of the happiest. Nothing surprises the uninitiated more than to find how happy the inside of a school for feeble-minded is. I find little of diagnostic value in these empathies.

With respect to the epileptics, Group III, I conceive that quite another situation holds. Epilepsy is the *morbus sacer*, the disease of mystery. Whether the reaction be occasionally one of pathological politeness so called, or whether the phase of unreasonable irritability rubs us the wrong way, whether the unaccountable occasional amnesia and the queer optimism of the epileptic contribute to the result, it is impossible to estimate. On the whole, however, the epileptic seems to me to rouse not only less *sympathy* than the feeble-minded person, both single and *en masse*, but it also proves far less possible for the normal man to read himself into the epileptic in the empathic manner. Possibly this is a somewhat personal reaction on my own part. Research should be undertaken in the matter. Comparative studies might well be made in the global reaction of empathy which the epileptic makes as against what the hypophrenic makes.

With respect to Group IV, the group of mental diseases due to alcohol, drugs and poisons, we find our empathic index, as a rule, high. Whereas our sympathies may carry us in either direction, our empathy is pretty nearly positive. On the whole, what the alcoholic does is something like what any of us might do. The variation of experiences of the alcoholic is such that apparently we can all read ourselves into the alcoholic situation somewhat. Even were the psychic phenomena of alcoholism in themselves so queer and outside the range of the normal altogether, yet the frequency of these phenomena would give the normal man a high empathy for the alcoholic.

The morphinist, on the other hand, is, so far as I have been able to observe him in a small experience, far less the object both of sympathy and far less positive when it comes to the empathic test. There are, however, within the group of the pharmacopsychoses some empathic tests. I should say that, on the whole, the victim of delirium tremens yielded a positive empathic test in many instances, when victims of the companion disease alcoholic hallucinosis yield a lower index. The fact that in alcoholic hallucinosis, a perfectly clear consciousness gets split with hallucinatory data means of course a situation that seems far less consistent than the situation in delirium tremens. The victim of

delirium tremens is, as a rule, a sick-looking man, with tremors, flushing and sweating, and he somehow seems to us the more or less appropriate vehicle of his hallucinations. But as to this minor distinction of subgroups, it would not be well to speak without a statistical and long-standing analysis.

With respect to the poison cases, nothing special need be said.

With respect to Group V, the mental diseases due to manifest focal brain disorder, I would say that the victims of this sort of mental disease, like those of the somatic or symptomatic group, — Group VI, — strike us as, on the whole, sick persons. They strike us as not unlike what we ourselves would be under certain circumstances. The phenomena strike one as quasi-normal, judged by the standard of diseases in general. Even phenomena of the vascular (arteriosclerotic) group, with their physical accompaniments of paralysis, for example, do not strike us as anything but quasi-normal.

With respect to the seventh or presenile-senile group — gerio-psychoses — I find that the empathic index is in many instances much lower than I should naturally think that it might have been. The fact that the world, as it were, confronts the oncoming of a certain dementia as a necessary feature of old age ought to give most of us a high empathy for the condition. Possibly the true simple dementias due to plain wasting of brains do so give us this high estimate of the quasi-normality of the clinical phenomena shown. However, amongst the presenile psychoses with their curious hypokinetics, and amongst some of the presbyphrenias with their strange falsifications, I find numerous instances in which the empathic test comes out negative. We do not read or feel ourselves into the situation presented by these patients, whatever may be our sympathy for the obvious fact of the old age.

It is with the next two groups — the eighth and ninth groups of schizophrenia and cyclothymia, respectively — that the differential value of the empathic test, according to my prediction, will be found greatest. The schizophrenic (*dementia præcox*) group is by the very nature of the dissociations, which are very prominent in it and which have given rise to Bleuler's designation (*schizophrenia*), a group of cases in which the phenomena are by hypothesis strange. Somewhat less strange in the hebephrenic subgroup are the phenomena of *katatonia* and many of the paranoids approach the apex of strangeness amongst the whole range of psychopathic symptoms. The dissociation, splitting, the schiztic character of the deliverances of the victim of

dementia præcox give one an impression of queerness that probably no other phenomena can give. This impression is certainly confirmed by the details of analysis, say of a given set of actions or grimaces, or a manuscript letter, but what we are studying here is not so much the results of analysis as the global and total effects produced by the patient.

Without here bringing statistical data to bear upon the point, I venture the prediction that an offhand diagnosis of dementia præcox can often be made (as against the cyclothymic) from the general impressions conveyed by the patient. In fact, the phrase "general impression" is nothing but a phrase for the basis of the empathic test. Many a tyro in psychiatry has wondered how his hospital superintendent, with his brow furrowed with the care of ways and means, can possibly arrive at a rapid diagnosis of good or evil prognosis in a man whom he is allowed to study with but a passing glance. The tyro's analytic work, running to many lines or pages of record, fails to give him this general impression, fails to give him data upon which to make the empathic decision. Skirting widely about the whole complex of phenomena, the old medical superintendent now become far more worldly wise than he is psychiatrically erudite, is enabled to come at a correct conclusion. It is perhaps on this basis that "age is for counsel." My point would be that by a study of these global effects, the young man may become prematurely or preternaturally early a counsellor in these matters. Perhaps the reason why the law wants physicians to wait five years after graduation before their psychiatric opinions are legally of value, is because the effects of symptomatic analyses are often so inadequate. Naïveté, as above said, is often superior to analysis. What we crave is, however, neither naïveté nor analysis, but a synthetic general result of a reaction made upon the analytic data.

Accordingly I would set as a research problem in the empathic reaction, the whole field of schizophrenia (dementia præcox) and ab^{ic} cyclothymia (manic-depressive and similar psychoses).

With respect to Group X, the psychoneuroses, these reactions are so nearly normal in most instances, that it is hard for the common man to consider them in the field of "insanity" at all. He hardly wishes to call them psychopathic, yet amongst the reactions of hysteria are some of the most extraordinary phenomena that the world sees. Nevertheless, the empathy is to my mind very frequently positive despite the extraordinary nature of the things that happen. Somehow the glove or stocking anæ-

thesia or even the hemianæsthesia strikes one naïvely as a good deal more likely a thing to happen than the less regular phenomena of true organic nervous disease. Again the somnambulisms and automatisms of this group have something distinctly empathic and quasi-normal about them.

I need not consider Group XI, the psychopathoses or psychopathias in general particularly here, because amongst this rag-bag group of psychopathies are diseases which lean toward several of the others; there are psychopathies which suggest feeble-mindedness, there is an epileptoid group of psychopathias, there are many with a schizophrenic or cyclothymic trend, to say nothing of the great group of hysteroid cases.

It may well be, however, that a study of the global reactions intended to secure data for the empathic test may help to move many of the psychopathias out of this residual group into other and better established groups, or even into new groups.

Thus I bring to a conclusion an all too rough statement concerning the empathic index in the greater groups of mental diseases. I have turned the phrase about in connection with these different groups in such wise that it must be evident that the empathic reaction is nothing new, strange, impractical or against experience when taken in itself. Quite the contrary.

The degree to which one can read or feel oneself into a fellow being, particularly a patient, is a matter of common and everyday observation. Every newspaper story, every political reaction, every romantic situation, most of the human reactions, many of the philosophies are somehow entangled in this question not merely of our likeness to our fellow beings but of our logical identity with them in one or more respects. However conclusive the statistical studies of the greater groups of mental disease may prove, the general study of man by man with respect to his empathic understanding of his fellow being must prove profitable. The psychopathic may prove the key to the normal, as has proved true in the past. I commend this study to physicians and others because (save for the recording) it is far from a time-consuming study; because, in a sense, its results vary infinitely with the amount of analysis performed, and because, finally, the study of these reactions will enable one the better to carry out the principles recently dubbed autognosis. If in the empathic impression conveyed to a group of persons, a given case seems quite outside the range of empathy to one set of persons and quite within the range to another, there is a problem set not merely as to the

mental disease in question but as to the attitudes of the observers themselves. Thus, in a peculiarly intimate way the study of empathy may allow psychiatry to begin where it always should, namely, at home.

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THE PSYCHIATRIC SOCIAL WORKER.*

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In no department of medicine is social work of such direct and logical importance as in psychiatry. Diagnosis, the first step of the psychiatrist, is dependent on knowledge of the conduct of the individual in the community, and very frequently such knowledge can only be obtained by a trained, unbiased person, *i.e.*, the psychiatric social worker. Treatment of such individuals is a dual process and consists of an adjustment of the patient to society while at the same time society must make (or be forced to make) an effort to adjust itself to the patient. The social worker acts, then, as the sensory and motor apparatus of the physician, while at the same time she builds up an independent social science which, in the long run, helps govern the knowledge and conduct of the physician.

It has been stated that treatment in many of the psychiatric diseases is a process of adjustment, a series of maneuvers which result in the location of the patient in his proper place in society. Before going on to consider the mechanism of adjustment, it is necessary to outline briefly the field of psychiatry. For the most striking thing in the development of the field of mental disease has been the extension of the subject *socially*. Independent of its closer union with neurology, has been its affiliation with criminology, social hygiene, the employment phase of economics, the distribution of charity and social relief, and, lastly, its recognition as a great branch of medicine by the military authorities, so that the neuropsychiatrist has a great role both in the selection of army and navy personnel and in the care of the disabled. It is these social affiliations that have made the psychiatric social worker a necessity. Dependence upon social workers, untrained in psychiatry, however well trained otherwise, necessitates personal training by the psychiatrist, and this is both wasteful of time and necessarily incomplete.

We may divide the field of psychiatry, in so far as social work goes with the following branches: —

The psychoses proper — the frank insanities. Here the role of the social worker is first in securing good data which serve in the

* Being Contributions of the Massachusetts Commission on Mental Diseases, series of 1918.

making of the diagnosis, and in the addition of authentic data concerning inheritance, and general life development of the insane. I emphatically state that no case of mental disease can be *thoroughly* "worked up," and that many cases are hopelessly handled, without data so obtained. A thorough follow-up system throws light on cases of mental disease such as could not be brought to bear otherwise, and the statement may safely be ventured that many of the opinions now current in psychiatry will need radical alteration when such follow-up systems have been used for a few years.

The young social worker, and even the older, as well as many physicians become discouraged with their results in the handling of the insane. "What," they ask, "can you do for the patient? Nothing but commitment to an insane hospital, and what is that but a form of imprisonment?" They have missed the fundamental point in commitment — the safeguarding of society. For it is not the actual physical damage an insane person may do that is of greatest importance — it is the generalized *social damage*. This damage occurs because he disorganizes homes, lowers the mood and the efficiency of the normal people in daily contact with him, is a focus of social difficulty of all kinds which becomes diminished to its lowest possible figure on commitment. Here the social adjustment, in which the worker plays a preliminary part, is in sequestering the individual, but the social adjustment thus carried out is of high importance.

Feeble-mindedness has great social significance as has been pointed out in almost innumerable writings of late. Though it is my belief that there has been marked exaggeration as to its role in criminality, prostitution, and the like, yet it remains true that the social difficulties of the feeble-minded bring them into contact with the courts, the relief agencies, and make them the despair of the employer. Since many of them are non-committable, and others need not be committed, the difficulty of finding a place in the social structure for these is a problem for the social worker. To keep the lawlessly inclined out of trouble by constant supervision, to find a place of employment for the low-grade employee, are not easy tasks. Yet that the first task has been to some extent accomplished is based on the authority of Dr. William Healy, who states that juvenile crime in Boston is neither so frequent nor so serious in nature as in Chicago, and this he attributes to the excellent social service organizations of Boston. The second task is part of the great general program of efficiency, and it may be summed up, "Low-grade work for low-

grade people." To have high-grade people doing such work is economic waste.

The extension of psychiatry to criminology is merely the recognition of the fact that the point of departure in crime is the *criminal himself*, — his mentality, his personality, — matters which call for psychiatric investigation. With the entrance of medicine and psychology into this field the scope of the activities of the psychiatric social worker has broadened, potentially at least, to an almost unlimited degree. For the collection of the life data relating to any one who has become a breaker of the laws is one of the two fundamental inquiries necessary before establishing responsibility, and before initiating treatment. For the conception of treatment must supplant that of punishment, and treatment is social adjustment, which at present is partly undertaken by probation departments, and in larger part not undertaken at all. Here is a social work of difficulty but of great promise for the trained person.

Now it is not only the insane, the feeble-minded, the criminal who are the "material" of the psychiatrist and the psychiatric social worker. The difficulties of adaptation to the "Great Society," the balking of desires and instincts, the crushing power of failure and disillusionment, the injury done by poverty and all that goes with it, *psychically and physically* make up the background of neurasthenia, psychasthenia, hysteria, — diseases of emotional and intellectual mal-adaptation. Here especially the social situations are of great importance and often the remedy is entirely social. Removal to a better neighborhood, a start on another social road, the smoothing out of domestic difficulty, adjustment to the mate, better care for the sick child, relief in part from monotonous drudgery — I believe that here is where social service helps *essentially normal people* out of abnormal social situations into relative health.

One cannot omit the war from any discussion, and here the psychiatric social worker may confidently look forward to a field of work. For the war will break down many a man, not only in the way indicated by the term "Shell-shock," but by producing a protracted mental attitude which may be classed with neurasthenia. Men will come out weary, restless, full of physical and mental pains and aches, ridden by obsessions, and harassed by inaptitude. And these men will have to be helped, and *solicitously* helped, with the attitude that they are claimants to the best efforts of society. Their claim will be supported by those who love them, by those who will find their chief interest in the

problem: "How can *He* get well?" Anything short of the best will produce mutterings and a sullen discontent that may well shake the foundations of the State. This aspect of the work of the psychiatric social worker cannot be overemphasized. Aside from the ordinary value of such social-adjustment work, it gains additional importance because in direct ratio to its success it will make for social stability.

Consequently there is a double need for such a school as Smith College is fostering this summer, — the peace-need and war-need. Civilian and soldier, in so far as they become neuropsychiatric problems are problems of society, and must be helped by trained workers. Good intentions alone will be worse than useless, and the co-operation of psychologists, sociologists, social workers and psychiatrists to educate young women for the work is a step toward social efficiency.

What type of woman is needed? It is perhaps easier to state the objectionable qualities. For this kind of work brings one into contact with such disturbing qualities of human personality as to make frankness necessary in the consideration of the character of the worker.

First, the prude must keep away. For in psychiatry one meets sex not only naked but often perverted as well. One must be able to face the objectionable without qualm and prejudice in order to adjust to it. The essence of prudery is a squeamishness to fact, and this is the crime of crimes in a social record.

Second, one must not be "over strong." By this I mean that person who believes the race is to the swift, and the battle to the strong, and that they who fall are unfit and ought to be eliminated without further ado. It takes only a glimmering of sanity to know that this is not true, that it is pure, unadulterated egoism, the gospel of the young and successful. The social worker needs above all things the idea that insanity, crime, failure, all have their seed in her, that normal and abnormal are distinctions applied to extremes of quantitative difference. Such an idea links together social worker and patient with the bond of fellowship, and insures sympathy and tact on the part of the former, and a willingness-to-be-helped attitude on the part of the latter.

Hyperæstheticism, that is, attention to form, rather than matter, the cult of beauty, is out of place in a psychiatric social worker, but there is little danger that a person tainted with this quality will seek the work. The over-emotional rarely stay in long, for gushes of feeling, ecstasies of sympathy bring too violent

reaction in the face of unbudging reality. For society has so few real adjustments, and so much creaking and groaning of paraphernalia is needed to utilize these, that sturdy, clear-sighted energy is necessary and the over-emotional rarely is capable of sustained effort.

It is understood, then, that the qualities of good, solid, young womanhood are present in the candidate for training for psychiatric social work. Such a person will be fitted for activities that are as well paid as the better grade of teaching, and for her services the demand will raise the reward to steadily higher levels. Unquestionably, the war will raise all social work in dignity and remuneration, for the war is bringing a unifying feeling of social responsibility to the heart of every American. *And social responsibility is the energizing feeling behind social activities.* Like other problems of society the day when we considered the field of psychiatry the province of medicine alone is passing, has almost passed. As ally and servant, social science has stepped in to help the older profession.

INSANITY *VERSUS* MENTAL DISEASES: THE DUTY OF THE GENERAL PRACTITIONER IN PSYCHIATRIC DIAGNOSIS.*

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The time has come when the general practitioner must assume responsibilities new to him: he must become as much a psychiatrist as he is specialist in other directions.† But how specialistic, it may be asked, is the general doctor-man to be? *Quien sabe?* And times change. But so much is certain: The general doctor-man does not know as much about psychiatry either as he should know, or as he has command of, let us say, pediatrics, gynecology or dermatology. Science, C. S. Peirce defined, I believe, as the range of ignorance. Well, the general practitioner's range of ignorance *re* psychiatry is altogether too wide for his own conscience' comfort and disastrously wide for the good of society.

All this can now be shouted from housetops by reason of what the layman terms "shell-shock," a problem for medicine no less wide than the whole of clinical neurology and psychiatry, the field we are coming to know as neuropsychiatry.‡ But already before the shell-shock alarms, the American general practitioner had become responsible in these matters for more than his father had to be. In 1906 the State of Michigan had laid down its psychopathic ward at Ann Arbor and placed in control of it a specialist novel in training, functions and scope. Now, it is safe to say, no State can hold up its head in a place of the highest honor in civilization without establishing a psychopathic hospital. The Commonwealth of Massachusetts, in 1912, followed the lead of Michigan. Private endowment allowed in 1913 the establishment in Maryland of another institution in which the scientific point of view made use of physicians, psychologists and trained lay workers for the high, modern purposes of mental hygiene. Meantime, societies for mental hygiene had been established,§

* Read before the section on nervous and mental diseases at the sixty-ninth annual session of the American Medical Association, Chicago, June, 1918.

† To show the popular interest in these topics, see any numbers, especially current bibliography, of "Mental Hygiene," published quarterly by the National Committee for Mental Hygiene, Inc., 50 Union Square, New York City.

‡ See remarks in the Shattuck Lecture for 1918. Southard, E. E. "Shell-shock and After." Boston Med. and Surg. Jour., 1918, Vol. CLXXIX, p. 74.

§ Connecticut, 1908; national, 1909; Illinois, 1909; New York, 1910; Massachusetts, 1913; Maryland, 1913; Pennsylvania, 1913; North Carolina, 1913; Dayton, Ohio, 1914; District of Columbia, 1915; Alabama, 1915; Louisiana, 1915; California, 1915; Rhode Island, 1916; Ohio, 1916; Tennessee, 1916; Missouri, 1916; Indiana, 1916; Iowa, 1917; Virginia, 1917.

and doubtless others are now moving. The yeast is working, too, in the National Conference of Social Work; and just as "charities and correction" has fused and crystallized into "social work," so the former committee of that body on "feeble-mindedness and insanity" has now crystallized into a committee on "mental hygiene." The medical man who does not some year attend a meeting of the National Conference of Social Work* will sooner or later wake up to reckon without his host — the social worker. In brief, no sign fails to point to an increasing demand for more medical service, as well as for more service of every technical sort, for the psychopath.

But what exactly ought the general practitioner to do for his instruction in modern psychiatry? He looks back at a meager training. He was by law, as a rule, excluded for a period of years from whetting his mind on medicolegal problems of commitment: the law somehow permitted him to remove an appendix the moment he passed his State board examination, but the law required experience and a partner in the matter of certifying insanity. Again, early in this century a flood of Teutonic verbiage overflowed the field, and the graduate doctor who ventured inside an asylum hastily beat a retreat when *Merkfähigkeit* raised up its head or *Dämmerzustand* closed down over all. Of course various clearly written books gave the main facts (de Fursac,¹ Dercum,² Diefendorf,³ Peterson,⁴ White,⁵ *et al.*); but there was little in the medical school memories of most men to tie these facts to, except a few *curiosa* of dismal asylum walks and some medicolegal stories too mature for the nonsocialized medical student to grasp in their proper relations. Am I painting this picture too dark? Now and then at the apex of a particular career some outstanding man is able to prevail on medical colleagues to give him enough curricular time to do the topic justice; but, on the whole, even in so-called class A medical schools, either the ignorance of committees, or curricular pressure, or remoteness of clinical material, or an overripe professional point of view, has killed in embryo the medical student's chances of learning much about psychiatry.

I consider and propose that all general practitioners who feel at a loss how practically to use the relics of their psychiatric training or the products of their reading in such books as the above mentioned should as soon as possible spend at least a week

* Proceedings, National Conference of Charities and Correction, especially for 1915, Baltimore; 1916, Indianapolis; 1917, Pittsburgh; 1918, Kansas City (name now changed to National Conference of Social Work).

in contact with the clinical material of some institution like the Ann Arbor Psychopathic Ward, the Boston Psychopathic Hospital, or the Henry Phipps Psychiatric Clinic at Baltimore. I specify these institutions, not because the State institution men are unable to give in some instances even more valuable instruction, but because the specified institutions have contact with the acute, curable, incipient and dubious cases that most resemble the most important psychiatric material of general practice. I have not the slightest doubt that the authorities of the specified institutions would not only tolerate but actually welcome the arrival of the general practitioners for such study purposes. I am sure that the general practitioner who comes for a week will want to stay a month and will certainly come back for more.

WHAT THE GENERAL PRACTITIONER SHOULD KNOW OF PSYCHI- ATRY.

I want now to sketch the main features of the psychiatric landscape as I think it should be commanded by the general practitioner.

First, the general practitioner ought to become something of a *psychiatrist* and not in the first instance try to become an *alienist*. I am here making a somewhat unfamiliar distinction. In Table 1 I summarize in parallel columns the line of distinction as I think it might well be drawn.

TABLE 1. — *Line of Distinction between Alienist and Psychiatrist.*

| Alienists: — | Psychiatrists: — |
|---|---|
| Field: insanity, the insane. | Field: psychiatry, the mentally diseased. |
| Field: public, governmental, legal. | Field: social, private, medical. |
| Field: opinion for court use. | Field: medical, psychologic and social diagnosis and treatment. |
| Decisions alternative: sanity <i>versus</i> insanity. | Decisions selective: <i>e.g.</i> , syphilitic, feeble-minded, epileptic, alcoholic, coarse brain disease, symptomatic, senescent-senile, schizophrenic, cyclothymic, psychoneurotic, etc. |
| Insanity implies mental disease. | Sanity consistent with mental disease of mild degree or of special type. |
| Sanity: Insanity = 1 : 0. | Mental disease of all degrees, of many kinds. |

I recently discussed somewhat fully the intricacies of the foregoing parallel column.⁶ The point here rather is to ask how much of the field of mental disease, medically considered, the general practitioner ought to have in his range. I suppose there can be no doubt that the general practitioner ought to know relatively as much about psychiatry as he does about the sixteen or seventeen other main groups of topics that we denominate practical specialties. A general practitioner must be *general* in that he has actually more command of all the specialties than any one of the specialists is likely to have concerning the same topics. The general practitioner must at least have the function of being able to specify the right specialist or specialists to call in consultation. If by chance the general practitioner is himself something of a specialist in pediatrics or certain aspects of internal diseases (and surely every general practitioner ought to be something of a specialist in some direction if only to gauge his knowledge concerning general medicine), it is so much the better for the fate of the particular child or adult whose illness is in question. But we do not demand of the general practitioner a fine capacity in the diagnosis of skin diseases or of the minutiae of ophthalmology and otology. Up to recent times, we have not demanded from the general practitioner a knowledge of so much about mental diseases as we have often been able to demand for diseases of the skin, the ear or the eye. The time has come when the general practitioner must assume responsibility in this direction. Even at the expense of postgraduate work on the topic, the general practitioner is going to fail who does not proceed to acquire a grasp on the main conceptions of psychiatry.

I have recently, for the purpose of discussion with specialistic colleagues, gone over the textbooks and the main classifications used in institutions for the insane and the psychopathic, confining my attention to American views.⁷ I find an extraordinary unanimity on the part of these colleagues on the subject-matter of psychiatry. Those of the general practitioners who occasionally dip into the specialistic literature of mental and nervous disease strike into an atmosphere of what must seem the most lively controversy. But in point of fact the battles are greatly localized — I mean the actual battles concerning facts. There is a good deal of nomenclatural difference still preserved in sundry textbooks. I have been trying to put some order into this matter and offer in Table 2 a list of the major groups of mental disease which I think will be found approved by the vast majority of specialists.⁸ In

fact, I do not know a single specialist who would not agree that in some sense each of the subjoined groups exists. To be sure, some specialists might want to split the groups up further, but of the existence of this mass of medical data there is really no doubt.

TABLE 2. — *Mental Disease Groups (Orders).*

| | |
|---|---------------------|
| I. Syphilitic. | Syphilopsychoses. |
| II. Feeble-minded. | Hypophrenoses. |
| III. Epileptic. | Epileptoses. |
| IV. Alcoholic, drug, poison. | Pharmacopsychoses. |
| V. Focal brain ("organic," arteriosclerotic). | Encephalopsychoses. |
| VI. Bodily disease ("symptomatic"). | Somatopsychoses. |
| VII. Senescent, senile. | Geripsychoses. |
| VIII. Dementia præcox, paraphrenic. | Schizophrenoses. |
| IX. Manic-depressive, cyclothymic. | Cyclothymoses. |
| X. Hysteric, psychasthenic, neurasthenic. | Psychoneuroses. |
| XI. Psychopathic, paranoiac, <i>et al.</i> | Psychopathoses. |

I put into the left-hand column the everyday terms for these groups and in the right-hand column a revised and Hellenized nomenclature which I believe has some worth. Concerning this Hellenized nomenclature, I wish to say that in practice I would no more speak of the hypophrenoses in a school for the feeble-minded than I would of the *Leguminosæ* for dinner or the *Rosaceæ* for a nosegay. The advantage of the Grecian nomenclature is quite another, namely, the possibility of exact definition, which the everyday terms do not admit, particularly as some of them deal with disease entities (as dementia præcox) rather than with disease entity groups.

The practical contacts of the Boston Psychopathic Hospital with the Massachusetts profession lead me to the idea that the "range of ignorance" of psychiatry by the general profession can safely be localized.

Let us dismiss the eleventh or psychopathic group of the foregoing list, namely, a group I am sometimes tempted to call the "rag-bag" group of mental diseases, since the psychopathias, monomanias, psychopathic personalities, etc., which, with varying nomenclature, are dropped into this group, are the regions of densest ignorance on the part not only of general practitioners but also on the part of psychiatrists themselves.

Limiting consideration, then, to the ten other and better defined groups, I note that the first seven are groups whose general features are well enough understood by the general practitioner,

so that, barring mistakes in diagnosis and delays in handling, there is a minimum of gross error on the part of the general practitioner.

The general practitioner may not agree, nor will perhaps all of the older psychiatric specialists agree, that virtually every, if not every,⁹ case of mental disease requires consideration as possibly syphilitic (I). Nevertheless all practitioners concede that there is a syphilitic group of mental disorders, some of which require intensive treatment.

Again, with respect to the hypophrenias,* most physicians are aware of the increasing part played by the diagnosis of feeble-mindedness (II) in modern work touching general practice with special reference to the schools and juvenile courts. Though they may be in doubt concerning the exact value and scope of mental tests, nevertheless the general rubric of feeble-mindedness has become familiar. So much emphasis has been laid on the higher grades of so-called feeble-mindedness, namely, on the "stupids" or subnormals whom it seems invidious to term "feeble-minded," that I have had no hesitation in proposing the term "hypophrenic" to cover all forms of feeble-mindedness, not merely the feeble-minded proper of English and Canadian usage but also the imbeciles and idiots below the feeble-minded proper and the "stupids" or subnormals above the feeble-minded proper.

The epileptic group (III) and the group of mental diseases due to alcohol, drugs and poisons (IV) are reasonably familiar to the general practitioner; and although a good many bad mistakes may be committed in these groups, yet the percentage of errors committed by psychiatric specialists themselves in the same groups is so high that we should not weep about general practitioners' moles from our own specialistic eyes containing large beams.

The fifth group in the foregoing classification, namely, that of mental disease due to focal brain disorder (V), is another group sufficiently familiar to the general practitioner, as also to the neurologist whose special field it touches, and the common categories of mental symptoms found therein are likewise familiar. The general practitioner sees enough cases of arteriosclerotic brain disease, of meningitis, of brain tumor and the like, to be familiar with the not very special mental effects that these brain disorders evoke.

Again, in his everyday capacity as a diagnostician, the general practitioner gets a certain familiarity with the sixth or internist's

* For this term see remarks by the writer in Tr. Am. Assn. for the Study of the Feeble-minded, 1918.

group of mental disorders — the so-called symptomatic psychoses based on definite somatic disorder (VI), such as a typhoid fever, a pneumonia, a puerperal exhaustion, a cardiorenal disease, a dysthyroidism or even a pellagra. The symptoms here also are such as are familiar to the general practitioner and run on the same lines as the symptoms of disease in general.

The seventh, the senile and presenile group (VII), is again a group in which the symptoms are for the most part such as are easy to understand in the quantitative terms of everyday life.

But, with the enumeration of these seven groups, we have come to the conclusion of the list of diseases in which the symptoms are, as one might say, familiar and well nigh quasinormal, following lines which the physician can readily understand by comparison with the phenomena of his own life. For in the three remaining groups, the schizophrenic (VIII), cyclothymic (IX) and psychoneurotic (X) groups, there are phenomena of such supernormal or subnormal degree or of such an abnormal and dissociative nature that a considerable specialistic study is required to unravel them. I find that many practitioners, even in haughty old Massachusetts, figuratively throw up their hands when asked to define dementia præcox (here termed schizophrenic) or manic-depressive (here termed cyclothymic) psychosis.

As for the psychoneuroses, the attitude of some practitioners, though I hope not too many, is that the symptoms in this group are "imaginary" and by consequence in some sense nonexistent. The attitude of many general practitioners to the psychoneuroses is like the attitude of the Christian Scientists to disease in general: the psychoneuroses are regarded as a form, not perhaps of "mortal error," but of nonexistent disease which the patient is to be got rid of by a process akin to exorcism. This erroneous opinion¹⁰ depends on a confusion between the method of psychotherapy and the nature of the etiologic or genetic features of the psychoneuroses. Because by faith mountains are moved, one has no license to consider that faith established the mountains in the first place.

Accordingly, the difficulties of the general practitioner in confronting the schizophrenics and cyclothymics, on the one hand, and the psychoneurotics, on the other, are of different sorts. The practitioner of some years' standing has simply had no opportunity to study intensively in the medical school or in post-graduate work enough schizophrenics and cyclothymics to permit his understanding their nature. As for the psychoneurotics

(whether in the form of hysterics, neurasthenics or psychasthenics), the general practitioner is sufficiently familiar with their general nature, having enough of them and to spare in his consulting rooms. Nevertheless, his ideas concerning them are apt, I think, to be somewhat vague, or at least vague enough to permit his calling many a case of schizophrenia or of cyclothymia erroneously a case of psychoneurosis. Hence I think are brought about a number of false prognoses and a number of poor prescriptions for sanatorium treatment, treatment by change of environment, or special treatment at home, when some other of these treatments than the one chosen would have been far better for the patient.

It is for no academic reason, therefore, that I ask the general practitioner to bring himself up level with the times in the matter of schizophrenia and cyclothymia. I feel that if he gets an adequate notion of schizophrenia and cyclothymia, his already reasonably correct notions of the psychoneuroses will get their proper balance and perspective alongside the other psychoses. I found one really eminent practitioner denouncing the word "schizophrenia" because he had been practicing for decades and ought really to have known what schizophrenia meant if there really was any such symptom or condition. On inquiry, however, I found that the eminence of this practitioner, which was very genuine, had been attained in ways which excluded him from any knowledge of the peculiar symptom or condition known as schizophrenia. And what holds for dementia præcox holds also for manic-depressive psychosis. The week's excursion to some psychopathic hospital or psychiatric clinic, above suggested, ought to lay hold especially on the concepts of schizophrenia and cyclothymia; and the attainment of elementary knowledge concerning these two groups will bring the level of the general practitioner's knowledge concerning mental diseases up to the level of his general knowledge concerning the diseases of other specialties. In particular, his practice with the early cases, cases which he sees often earlier than does the psychopathic hospital or the psychiatric clinic, will be tremendously benefited thereby, and his efforts at psychotherapy will not be measurably wasted on schizophrenics and cyclothymics, but will be concentrated on the genuine psychoneurotics.

If one thinks that this program for bringing up the level of the general practitioner's knowledge in mental disease to his general level in other specialties is too dogmatic and concrete a program,

I have only to say that it is at all events a program, and that measures of some sort are stringently necessary in the interest of the mental hygiene of the community.

I trust that in the foregoing paragraphs I have successfully conveyed the impression that these counsels have nothing to do with nomenclature and terminology, but only with the groups themselves under whatever name they might go. I recently gave a talk on shell-shock with some literary examples of the neuroses in the group, and was assured afterward by a practitioner that he was now certain of what he had long suspected, namely, that there was no such thing as shell-shock. I found that (a) his idea that there was no such thing as shell-shock reduced to the idea that had been for some decades in his mind that (b) neuroses do not exist because (c) their symptoms were "imaginary" and that (d) to be imaginary meant for this man to be nonexistent. Now *is or is not this distinction between the imaginary and the non-existent too fine a distinction to implant in the medical student's mind?* Just as the laity is unable to distinguish successfully between "hereditary" and "congenital," so I find many a medical man unable to distinguish between "imaginary" and "non-existent." If the neuroses have no structural sign post mortem, are the neuroses nonexistent? But peace to the soul of the general practitioner who listened to my shell-shock talk! Calmly identifying "imaginary" with "nonexistent," he probably is a very good psychotherapist among his parochial flock.

I have adverted above to one little matter of nomenclature, insisting on the virtues of the term "hypophrenic" as including the entire swelling group of the so-called feeble-minded. The human advantages of using the term "hypophrenic" pale into insignificance beside the advantages of using some other term for the so-called dementia præcox group than the term borrowed by Kraepelin to designate a group of diseases which he had synthesized from the literature. Some day I wish to write a paper called "Nondementia, Nonpræcox."

If I tell a layman that so-and-so is suffering from shell-shock, the layman is aware that the term "shell-shock" *connotes* a great deal about the war and its effects, but quickly observes that the term *denotes* little or nothing, and he is forthwith thrown back on the expert for information as to what shell-shock really means and what its prognosis may be. Not so when the ardent social worker learns that so-and-so is a victim of dementia præcox. Is she not almost entitled to think that a victim of dementia is de-

mented or else is going to become demented? Are there not similar significances attached to the term "præcox"?

I believe that a great deal of harm has come to patients from the use of the term "dementia præcox," and most psychiatric specialists whom I have consulted on the point cordially agree with me. On this account I have felt that the proposal of the Swiss psychiatrist Bleuler¹¹ to use the term "schizophrenia" for cases subject to the peculiar dissociation found in these cases is a good one. The fact that it has a peculiar sound, novel to medical ears of the last generation, is no good reason for denouncing the term "schizophrenia," since the symptoms of the disease are at least as peculiar as the name, and there is a good deal of novelty about the whole conception to many general practitioners and consulting internists.

I will not here argue in detail for the use of the term "cyclothymia" instead of manic-depressive psychosis, although I think the tendency of usage and certain logical points may be advanced in favor of cyclothymia, a term which includes in its prototheme the idea of periodicity, always potential in this disease, and in its deutheme the idea of affective or emotional disorder, a constant feature of the disease.

I give below the subforms of these eleven great groups of mental disease.* These subforms are a product of some American textbooks and specimens of classification now most in vogue. I think this listing, for which I do not wish here to argue in detail, certainly shows that psychiatry is on a pretty stable basis so far as classification is concerned — possibly as stable as many other growing specialties.

Two points are to be made concerning this subjoined list. The diagnosis of these entities (or generic groups) under the greater groups (or orders) is not to be expected of the general practitioner, nor even of the psychiatric specialist on cursory or brief examination. Indeed, I hold that much harm has been wrought by an offhand diagnosis of "general paresis" when all any one could really say, with laboratory tests also in hand, was that the patient had "neurosyphilis." Many errors of this sort, both by general practitioners and by psychiatrists (including ourselves), are given in detail in the monograph published by Solomon and myself⁹ in 1917 on neurosyphilis. No, it is much better for the peace of mind of practitioner and patient that the practitioner

* For more particulars, see SOUTHARD, E. E.: "The Genera in Certain Great Groups of Mental Diseases." To be published in Tr. Am. Neurol. Assn.

shall stop short with his *group* diagnosis and let the *entitative* (generic) diagnosis wait on the psychiatric specialists (one of the soundest of whom is Father Time). It is not for the purposes of "brilliant," that is to say, premature and at all events merely lucky, diagnoses that I subjoin the genera which American psychiatry seems, by its textbooks, to afford.

The second point deals not with the objects of diagnosis so much as with the process of diagnosis. I have placed the great groups with Roman numerals (I, syphilopsychoses; II, hypophrenoses, etc.) in a certain sequence which I take to be the practical sequence of successive exclusion and elimination that is of the most value in the present phase of psychiatric theory. No one need use this sequence if one prefers another, and the sequence will inevitably change in the course of time when new facts and new tests are granted to us. And not only the sequence but also the list itself will inevitably alter. Not only have I placed the greater groups or orders of mental disease in a particular practical sequence, but I have endeavored also to place the smaller groups or "genera" of mental disease in a practical diagnostic sequence under each greater group. Again, any one who chooses to use the items as a *list* and not as a *sequence* is entitled to do so: I would claim only that *some* sequence is of practical value in diagnosis, at least for tyros.

TABULATED SUGGESTIONS FOR GENERIC CLASSIFICATION OF MENTAL DISEASE GROUPS.

I. Syphilopsychoses (the syphilitic mental diseases): —

Genera: —

General paresis.

Juvenile paresis.

Nonparetic forms: —

Meningitic.

Vascular.

Gummatous.

Less common genera: —

Syphilitic feeble-mindedness.

Syphilitic epilepsy.

Tabetic psychosis.*

Syphilitic paranoia.

Atypical.

* Of course this is sharply to be distinguished from ordinary *tabes dorsalis* and nervous disease, and from so-called *tabo-paresis*, which by the best nomenclature is a subform of general paresis.

II. Hypophrenoses (the feeble-mindednesses, including graded forms of idiocy, imbecility, moronity (in the English nomenclature feeble-mindedness proper) and subnormals): —

[Syphilitic.*]

Encephalopathic: —

Microcephaly, hydrocephalus, focal brain disorder.

Glandular: —

Cretinism, infantilism, dysadenoidism, mongolism (?).

Hereditary: —

Feeble-mindedness, amaurotic family idiocy.

Atypical.

III. Epileptoses (the epileptic group): —

[Syphilitic.†]

[Feeble-mindedness with epilepsy.‡]

Alcoholic.

Traumatic.

Encephalopathic.

Jacksonian.

Symptomatic.

Idiopathic.

Equivalent.

Narcoleptic.

Borderland.

IV. Pharmacopsychoses (the group of mental diseases due to alcohol, drugs and poisons): —

[Epileptic.§]

Alcoholic: —

A. Pseudonormal: —

Drunkenness, pathologic intoxication, dipsomania.

B. Peripheral — central.||

Delirium tremens, hallucinosis, Korsakow's disease, pseudoparesis.

C. Central: —

Jealousy-psychosis, paranoia (?), dementia.

Drug: —

Morphine, cocain, alkaloid.

Poison: —

Lead, gas, mercuric chlorid, special.

* Syphilitic feeble-mindedness has been classified under the syphilopsychoses, Group I.

† These have been classified under the syphilopsychoses, Group I.

‡ These have been classified under the hypophrenoses, Group II.

§ These have been classified under the epileptoses, Group III.

|| The nomenclature of these subgenera must remain dubious. I think most workers among the alcoholic psychoses would recognize the value of dividing them in some such triple way as above. The general practitioner has not yet at all clearly in mind, I think, the distinction now drawn by specialists between drunkenness and pathologic intoxication and between delirium tremens and alcoholic hallucinosis. Perhaps it would be well enough to leave these distinctions to the specialists were it not for the fact that so many medicolegal points hinge on the practical decision in cases that fall into the hands of the police.

V. Encephalopsychoses (focal brain lesion group of mental diseases): —

[Syphilis.]*

[Feeble-mindedness.]*

[Epilepsy.]*

[Alcohol, gas.]*

Traumatic. (Note that the traumatic *neuroses*, although they form a group of mental diseases, belong not here in Group V, but below in Group X, the psychoneuroses.)

Infectious. (The infectious group of encephalopsychoses here listed refers to cases like brain abscess and meningitis in which the organism has produced local destructive effects in the brain.)

Neoplastic.

Vascular. (Under this group would fall the great group of arteriosclerotic dementias, which, be it noted, are parted out from the old age psychoses, Group VII, below.)

Degenerative.

VI. Somatopsychoses † (the so-called symptomatic group of mental diseases): —

[Glandular feeble-mindedness.]

[Symptomatic epilepsy.]

Infectious, *e.g.*, typhoid.

Exhaustive, *e.g.*, puerperal.

Metabolic, *e.g.*, cardiorenal.

Glandular, *e.g.*, thyrotoxic.

Pellagrous.

VII. Geriopsychoses ‡ (the presenile-senile group of mental diseases): —

[Epilepsy.]

[Vascular.]

[Alzheimer's.]

[Progeria.]

[Late katatonia.]

[Involution melancholia.]

Presenile psychosis.

Senile dementia.

Presbyophrenia.

Senile psychoses.

VIII. Schizophrenoses (the dementia præcox group): —

Hebephrenia.

Catatonia.

* These have been classified, respectively, under syphilopsychoses, Group I; hypophrenoses, Group II; epileptoses, Group III; and pharmacopsychoses, Group IV.

† The term "somatic" is here used following a frequent neurologic plan which employs the term "soma" for the body at large, as against the "encephalon" or brain.

‡ This term is adopted provisionally as against the possible term "presbyopsychoses" because of Nascher's choice of the term "geriatrics" for his proposed branch of medicine, dealing with the diseases of old age.

VIII. Schizophrenoses — *Con.*

Paranoid.
 Cyclothymoid.*
 Schizophasia.
 Dementia præcocissima.
 Dementia simplex.
 Paraphrenia.

IX. Cyclothymoses (the manic-depressive and cyclothymic group of mental diseases): —

Cyclothymic constitution.
 Manic-depressive.†
 Melancholia.
 Mania.
 Mixed.†
 Involution-melancholia.

X. Psychoneuroses: —

Hysteria.
 Neurasthenia.
 Psychasthenia.

XI. Psychopathoses (the psychopathic group of mental diseases): —

Prison psychosis.
 Folie à deux.
 Litigation psychosis.
 Paranoia.
 Sense deprivation psychosis.
 Monomania.
 Psychopathia sexualis.
 Psychopathic personality.

SUMMARY.

The psychiatrist is a specialist in a very complicated field with numerous great groups of diseases for his diagnostic consideration. Each of these great groups is likely to be as complicated within itself as, for example, the group of Bright's disease or the exanthems. The psychiatrist is logically opposed to the alienist. The latter has the function of the public and medicolegal adviser, whereas the psychiatrist is a practitioner whose aim is not merely diagnostic with respect to commitment; his aim is diagnostic with respect to a great number of therapeutic possibilities.

* This genus, if it be such, is devised to include a practically very important group of cases in which the schizophrenic process is precipitated by phenomena that resemble manic-depressive psychosis, or in which there is a definitely cyclothymic course in itself suggesting the true cyclothymoses.

† These two forms are designed to include, respectively, cases in which phases of pure mania or depression follow one another, and the cases in which depression and maniacal phenomena are commingled within the single phase.

The general practitioner must now advance to at least as much responsibility in psychiatry as he has in pediatrics, gynecology or dermatology. The general practitioner, if he is to remain of value, ought to know more about all the specialties than each specialist would be apt to know about all other specialties than his own.

Recent reviews of the ideas of psychiatric specialists show a great deal of unanimity as to the major groups of mental diseases. This genuine unanimity is obscured by nomenclatural divergence. At the risk of increasing the nomenclatural divergence, I have been of late proposing a pragmatic key to the group of mental diseases, dividing up the groups according to general and special therapeutic possibilities. I have accordingly no etiologic or somatosystematic suggestions to offer. My classification is purely practical and has no relation either to obvious clinical units from the standpoint of observation or to anatomic resemblances. For example, I would contend that a grouping of mental depressions as sometimes syphilitic, sometimes cyclothymic, sometimes symptomatic, etc., gives the practitioner no orderly means of making his decision in a brief space of time. Such a classification on the ground of clinical resemblances is, in office practice, next to useless, whereas the bigger decision as to whether the patient probably belongs in one of the eleven groups as herein presented is practically much more valuable. Then if the quest can be localized to two or three of the eleven groups, the patient's fate will be greatly benefited.

Again, I feel that the classification of certain diseases as organic dementias hurts the outcome for the patient by delaying decision. The practitioner is rather apt to feel satisfied with thinking that a case is somehow organic, whereas it may be his immediate duty to settle once for all whether the patient is syphilitic, and then to proceed to the more careful differentiation of the possibilities in the focal brain lesion group. But my attitude in general with respect to the general practitioner's duties in diagnosis is that in the first place it is his duty to determine whether the case belongs in the mental group and then to proceed to answer as many questions as available ordinary clinical tests can answer with respect to the place of the patient in some one of these major groups. It is certainly a waste of time for the general practitioner to approach the neurologic specialist with an at all complicated or longstanding case in which the serum test for syphilis has not been performed. With the multiplication of

opportunities for mental tests, it is also a waste of time for the general practitioner not to have submitted his case to such tests before bringing the patient to the specialist. I do not mean that the general practitioner should himself perform these tests but that he should utilize some local psychologist competent to perform them.

And so through the list, if the general practitioner knows the main features that distinguish these greater groups of mental diseases from one another, he will be able to utilize the specialist to much greater advantage. The specialist who should fear that his practice would be diminished by such a process on the part of the general practitioner would be so foolish that I suspect he could not be an effective specialist; for if the general practitioner could grasp the main features that distinguish these eleven greater groups of mental diseases from one another, he would carry to the specialist scores and hundreds of cases more than he now carries. For under these circumstances, the general practitioner would know how to couch a great many more questions.

Meantime I find from my Boston Psychopathic Hospital practice that the general practitioners are pretty well grounded in the first seven of the major groups of diseases listed. The general practitioner also has certain ideas concerning the psychoneuroses, but is rather apt to make somewhat obvious errors in the field of the schizophrenias (*dementia præcox*) and the cyclothymias (manic-depressive group). Sundry patients suffer therapeutically on account of delayed diagnosis in the two latter groups and especially from an erroneous identification of them as belonging to the group of the psychoneuroses.

As for the psychopathias in general, the general practitioner need not rush in where the psychiatric specialists fear to tread.

CONCLUSIONS.

1. The advance of the mental hygiene movement throws more responsibilities in psychiatric diagnosis on the general practitioner.

2. The general practitioner should bring his specialistic knowledge of psychiatry up level with his specialistic knowledge in ophthalmology and dermatology, for example.

3. Alienists are to be distinguished from psychiatrists, and forensic psychiatry ("alienistics") from practical psychiatry, in certain ways (Table 1).

4. There is at present great unanimity on the part of American

specialists in mental disease, as indicated by the adoption of common statistical forms (American Medico-Psychological Association).

5. For arriving at a diagnosis of mental disease, I suggest an arbitrary order of exclusion by eleven great groups, into which I have thrown the accepted entities.

6. Nomenclatural divergences are much more frequent than divergences on facts.

7. The use of Bleuler's term "schizophrenia" for dementia præcox and of the term (in cognate use) "cyclothymia" for manic-depressive psychosis is advocated in the line of exactitude and the ready formation of adjectives and relative terms.

8. The use of a new term "hypophrenia" for the various feeble-mindednesses is advocated.

9. The ending "*osis*" is in general advocated for the larger groups of mental diseases, parallel with the use of "*aceæ*" and "*osæ*" for botanical orders.

10. A tentative list of "genera" under these orders is given in the text.

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THE KINGDOM OF EVIL: ADVANTAGES OF AN ORDERLY APPROACH IN SOCIAL CASE ANALYSIS.

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William James somewhere says that the history of civilization consists in a search for a more inclusive order. Order is the last word in the profoundest developments of modern logic and mathematics; and order is at the same time the principle of attack upon the smallest everyday problem of the desk or kitchen. It has seemed to me high time that a principle of order be definitely introduced into one of the most important tasks of us all as social case workers, namely, the task of social case analysis.

Choosing as my title "The Kingdom of Evil," I wish not so much to speak of any proposed method of attack upon evil itself, as to speak of methods by which we may, as it were, localize the battle or shape the campaign. By the phrase "Kingdom of Evil" I intend to connote, not the worldly kingdoms about which there is so much present-day strife; I want rather to connote the kingdoms of animal, vegetable and mineral nature. I want to descant upon the advantages of establishing in our social art a *Regnum Malorum*, analogous in some ways to the, *e.g.*, *Regnum Animalium*. And I want in particular to insist that the establishment of such a realm of the evils logically considered is not merely a fantastic or academic task conceived by one having the classifying mania. To endeavor to establish a kingdom of evil upon a logical basis is to my mind a practical endeavor; indeed, perhaps the most practical endeavor which now confronts us in the world, whether the world of civilian evils which the National Conference of Charities and Correction was founded to meet, or the world of polemic evils which no speaker at these meetings can forget.

In particular, I wish to reassure any hearers who may feel that a logical analysis of the task of social work is bound to fail because it is by nature deductive and therefore founded upon the prejudices and errors of the past. At all events in its beginnings what I have to sketch as the realm of evils comes from purely practical considerations derived, in the first place, from medicine. A few words upon these beginnings will clear up the question of the inductive or empiric origin of these views and will go some way to showing why, when I come to talk of the major divisions

of the kingdom, I rank disease first amongst the greater groups of evil, and the first (in my own opinion at least) for the social worker, and indeed every altruist, to attack.

To reminisce a bit: When I came to deal practically with the psychopathic hospital situation, I found that the major problem was one of diagnosis. Although the majority of American psychiatrists were in general pretty well agreed upon a proper classification of mental diseases, yet the logical process of diagnosis of these diseases remained very much in doubt, particularly for the tyro. One could hardly say to the tyro more than that, after a few weeks or months of contact with psychopaths, he would find his psychic interior supplied with working notions of the important differences between mental diseases. The books, he was likely to be informed, would yield little to his advantage, even upon repeated reading and study. Those of you who as social workers have dipped into works upon psychiatry can follow me when I say it is not at all impossible to match the symptoms of any disease which you may confront with the symptoms of several diseases as described in the medical books. In fact, the more thorough and accurate the psychiatric textbook, the more likely you would be to match the facts in your particular case with the facts in the books as presented under a great variety of headings. It is not alone the tyro, but also the expert, who is amazed to find that all the symptoms in his case can be found, let us say, under the different headings of syphilis, dementia præcox, manic-depressive psychosis, etc. To use the language of medical logic, we can briefly put the situation by saying that in the field of mental diseases, there are few or no indicator symptoms. Any symptom, *e.g.*, mania, depression, persecutory ideas, grandiosity, hallucinations, and so on through the list, may be found alone or even in multiple combination with other symptoms of the list in virtually any one of the great groups of mental diseases.

Confronted as we were at the Psychopathic Hospital with something like 3,500 new cases of mental disease per annum all told (that is, about 2,000 cases flowing into the wards and about 1,500 cases through the out-patient department), and confronted, be it remembered, with cases of very doubtful nature, often mild and insidious and in their incipient stages, we diagnosticians found our task, to say the least, difficult. The difficulty was in no wise diminished by the fact that some kind of practical decision had to be rendered in a week's time. We were always much interested to learn whether our offhand professional diagnoses were ap-

proved by the commitment officers, on the one hand, and by the district State hospitals to which a certain number of our cases were transferred, on the other.

We quickly found ourselves at the staff meetings held over difficult cases applying a process of orderly analysis. We found ourselves trying to eliminate such conditions as syphilis of the nervous system, feeble-mindedness, epilepsy, alcoholism, before we came down to the minutiae of neurological diagnosis. We gradually found ourselves adopting a certain order in diagnosis. The logical process type of diagnosis with us became a sequential or orderly one.

This is no place in which to go into the details of the key to the practical grouping of mental diseases which was then developed. Suffice it to say, that the tyro in psychiatric diagnosis had displayed before him ten great groups of mental diseases, with an eleventh, or rag-bag group, in which to place all cases which would not fit the ten more definite groups. We expressly concluded that the future might well develop more than eleven groups; might conceivably alter the order in which the groups were presented; and might in very many ways modify the details inside the great groups. However, it seemed to us that, in a field of medical analysis in which there were no indicator symptoms, it would prove inevitably of advantage for the majority of cases to employ some sort of orderly analysis. Thus the groups might change, the entity details within the groups would inevitably and rapidly change with the progress of medicine, but the logical principle of order would presumably survive all the assaults of time. I do not need to do more than exemplify the nature of these medical details. Thus, the disease which you all know of as general paresis, might well be termed *Neurosyphilis paretica*. In the phrase *Neurosyphilis paretica* the adjective *paretica* corresponds with the species, and the substantive *Neurosyphilis* corresponds with the genus. If we speak of the ordinary red rose in scientific terms, we should speak of it as *Rosa gallica*, wherein the adjective *gallica* has to do with the species, and the noun *Rosa* refers to the genus. All of such matters, going back to Linnæus and the rest, need not concern us, except that possibly I should say that the idea genus-species is an idea that does not logically refer merely to plants or to animals, but that it may refer also to minerals, and indeed to any form of classification whatever wherein one kind of thing is subordinated to another. You should not let it disturb you to hear of diseases classified in genera and species any more than to hear of animals, plants and

minerals so classified. But just as there are plants like the roses but not deserving that generic distinction, so there are forms of neurosyphilis which are not paretic. We can unite the roses and rose-like plants into the great group or order *Rosaceæ*. In like manner can we unite the various genera of syphilitic mental diseases into an order syphilopsychoses. Now the syphilopsychoses form one of the eleven groups to which I referred above. The hypophrenoses, or kinds of feeble-mindedness, form the second; the epileptoses, or kinds of epilepsies, the third, the pharmacopsychoses, or mental diseases, due to alcohol, drugs, poisons, the fourth, etc. Not to go further into these medical distinctions among mental diseases, I will say that they all fall into a greater group which we may call the *Morbi Mentales*, or mental diseases, and these *Morbi Mentales* again find themselves lined up with fifteen more great groups of special diseases, such as the nervous diseases, the cutaneous diseases, etc.

But why do I indulge in a long and dry discourse upon the classification of mental diseases when I have set for my topic "The Kingdom of Evil?" The reason is that I wish to call attention to the *principle of order* which must characterize the logical process of diagnosis of mental diseases, where probably the entities are characterized by a display in different amounts at different times and under different circumstances of the very self-same symptoms — wherein, in fine, there are no indicator symptoms. Those of you who will look without prejudice upon the data of your social cases will be compelled, I think, to agree with me that the same situation faces us in the field of applied sociology. From no particular complex of social "symptoms," if we may so use this term, can we conclude forthwith what ought to be done. There are few or no hearers in the present gathering who have not read Miss Richmond's milestone book on "Social Diagnosis." You saw that she plunges forthwith to the use of the term *diagnosis*, which some might think consecrated to medicine. The problem of diagnosis is, indeed, not so very different in applied sociology (*i.e.*, social work) from no social entities. We have all read and profited from the reading of what it is in applied pathology (*i.e.*, medicine). But I call your attention to the fact that Miss Richmond's book deals largely, as do many of the medical textbooks on diagnosis, with the methods of collecting social data, and not so much with an analysis of their ultimate meanings. I understand that this latter task is in hand in a variety of works that will deal with the forms of social therapy.

May we not agree, then, that both medicine and social service have this in common: that there are few or no indicator symptoms in either? If a family is poor, that is no reason to think that giving them a check or sending them a bag of flour will do anything at all fundamentally to "cure" that family's social disability; and, if for poverty, we substitute any incompatibility you like, or any sample whatever of social maladjustment, you will all agree with me that no one of these bits of resourcelessness, incompatibility or maladjustment bears upon its face the proper treatment for the basic social trouble. In short, do we not need, just as in certain fields of medicine, a method of orderly analysis which shall attempt to take into account all the phenomena in hand? It is this kind of orderly approach to the problem of social analysis that I want to expound in this talk; yet I must say one more preliminary word.

As social case analyst, I find myself somewhat at variance with many social workers, doubtless because I cannot entirely remove myself from the prejudices of my medical profession. Every time the social worker shows me her card catalogue of families, I find myself as physician revolting somewhat therefrom and clamoring for the separate members of the family. Practically always we find, I think, one figure, or at least two figures, dominating the family scene as causes of the maladjustment in question. It is either some sick person demanding special care, or perhaps it is some ill-trained parent who can hardly be made to understand the situation; or else there is some legal entanglement which has the family by the heels without special responsibility to be laid to more than one or two of its members. In short, when a case of social maladjustment comes seriously before us, do we not want to get at the separate and distributive points of each individual in the family situation? Shall we ever succeed in social adjustment by any plan which treats the members of the family as virtually interchangeable and as all subject to some one economic, legal, moral or intellectual régime? Accordingly, as a preliminary to the orderly approach to the analysis of social case data, I would propose (subject to the limitations of a social service proposition made by a physician) that the analysis be applied to the separate members of a family, separately and individually, so that the point of view of each family member may get its due. In fine, I would be personally inclined to abolish the family as a unit of interest in social service and to replace that unit with the individual.

I will now return from my digression concerning the individual as the unit of interest in social work. I had just been trying to show how in the field of mental diseases a logical approach in diagnosis might well be made in an orderly manner, disposing the mental diseases in certain great groups listed in a certain practical sequence. It occurred to me, as I was writing out the group names of the diseases in my special field, that perhaps the *Morbi* might well fall into some greater category. Under what great kingdom might the *Morbi* fall? No other designation seemed to me more fitting than that of evil. Hardly any one except a trifle in words or some one under the influence of some pseudo-philosophy, could resent our calling the diseases evils. Perhaps then, I reflected, the *Morbi* might become constituents in a great kingdom, and this kingdom might well be the "Kingdom of Evil." What, then, I inquired, might be the other sister group of evils on a par with the *Morbi* or diseases?

At this point, it dawned upon me that since disease is after all chiefly a human and social affair, very possibly all of the evils would prove human and social from some point of view at least. The *Regnum Malorum* would prove to be a kingdom of social maladjustments. At about this time, I was given the opportunity of free and informal talks and discussions with a select and advanced group of social workers at the Boston School of Social Work. Under the influence and with the guidance of Mr. Jeffrey Brackett, Miss Ida Cannon, Miss Lucy Wright, and others, I built up in its present sketchy fashion the Kingdom of Evil as I now see it. Mind you, I do not say that Mr. Brackett, Miss Cannon and Miss Wright necessarily agree with me either in general or in details. My point rather is that the conceptions were built up under their influence and in the mild polemic of discussion at the Boston school.

Those of you who look into the problem of classification in general, or in any particular science or art, will find that classifications are infinite in number. Every one, doubtless, will have a classification of his own that differs more or less from that which another would prefer. What are the requisites of a particular classification? A Linnæan brevity of definition, a comparatively small number of groups, an appropriate subdivision so that smaller categories shall not be matched up with larger ones in the process of elimination — such are some of the requisites of a classification. As to the groups of evil which I present, I have no special confidence as to their finality. I do not particularly insist upon any special nomenclature. Above all, I would not insist

upon any particular order in analysis. The point I make is that *some* classification, *some* grouping and *some* order of analysis will prove essential to good social case work.

The big groups which I propose, namely, disease, ignorance, vice, crime and poverty, are doubtless not the only groups of evil in the world. Indeed I hear many of you say that ugliness and the unbeautiful form an evil which is not always due to disease, to ignorance, to vice, crime or poverty. I am bound to say, however, that most of the uglinesses that lead to any social maladjustment are often found to have their origin in one or other of the five groups I mention. Still, one ought not to be dogmatic upon such a point.

Again, the social case analyst may find it important to consider the economic situation of his social patient before his medical plight. Indeed, I think that the history of social service, deriving as it does so much from philanthropy, rather inclines the social work analyst to put poverty ahead of medical conditions, which he regards as less common. I sometimes think that the socialistically bent are persons who improperly put the question of economic level ahead of more important questions of educational or moral level. However that may be, my point now is that some order, not necessarily any particular order, and not necessarily the order I present to-day, is essential in social case analysis.

Miss Richmond's book on "Social Diagnosis," like many medical books on social diagnosis, deals with the methods of collection of data, and not so much with the process types of logical analysis of the data themselves. Now, the point is that many listeners at my lectures at the Boston school were inclined to think I was somehow proposing an order in which the case data were to be collected. Far from it; my considerations deal with analysis of the data after they are all handed in and either on paper or in the minds of the analysts. We all have attended many a social case conference at which the upshot was that the district workers would best fare forth and get more facts. The upshot of the conference would often be that such and such a line of inquiry would be most profitable because there was such and such a hiatus in the facts at hand. Now, we would all concede that the labor of the social case worker is infinite, and that no case exists in which more data of one sort or other might not be of value. My point is that the application of logical processes of case analysis should begin only when enough data are in hand to justify some sort of action. It is idle to analyze unless the

pragmatic issue is on the cards. Of course, in many a case not enough data will ever be at hand to warrant profound analysis. The pragmatic result here will naturally be a blundering failure or (what is not much better for the future of our art) a blundering success. Let our social case conferences, then, deal for the most part with cases in which sufficient data are at hand. Let us learn what under ideal circumstances should be done in all types of maladjustment which society provides. But are not these, you will inquire, infinite in number and variety? Probably not, one must reply who looks at the history of logical analysis in some of the most complex sciences and arts. At all events, I wish to inquire whether or not every case of social maladjustment will not fall into at least one of the following great groups of evils, namely: —

Regnum Malorum.

| | |
|------------------|-------------------------------|
| <i>Morbi.</i> | Disease. |
| <i>Errores.</i> | Ignorance. |
| <i>Vitia.</i> | Vices and bad habits. |
| <i>Delicta.</i> | Crime and delinquency. |
| <i>Penuriae.</i> | Poverty and resourcelessness. |

Some of you will inquire whether there are not cases of more general maladjustment, cases which it would be best to call simply cases of maladjustment or maladaptability. I think, however, that in every case of such supposed generality of nature so far presented to me, I have been able to determine that the phenomena in question could be classified under one or more of these five groups. For example, a case of social maladjustment was narrated to me in which a certain person, herself a social worker, possessed a wonderful and healthy physique, was a person of the highest and best education, was not the victim of any vices or bad habits, was involved in no legal difficulties whatever, and was a person of great wealth and resourcefulness in the world. Somehow, nevertheless, this social worker was described to me as not getting on, as socially maladjusted. A very slight logical dissection, however, betrayed the fact that, although she was a woman of perfect physique, her mental attitude was one of a slightly psychopathic nature. The misfit was inborn, or at least developed in early life and in such wise as to exclude the effects of poor education, poor moral training, and the like. This instance, doubtless not at all unlike several in your experience, will serve to point an important moral, namely, that the diseases or *Morbi* must include not only the obvious, acquired diseases,

but various defects, and these defects must be held to include mental defects and perversions. In short, we must count among the *Morbi* a variety of psychopathies.

In this connection I conned with greatest interest the pages of Miss Richmond's book and found that fully half of the cases in the book had most important psychopathic factors at work, whether out-and-out psychoses, mild psychopathias, alcoholism, or attitudes of mind toward diseases and other maladaptations which were not exactly wholesome. At the time I conned over the Richmond group of cases, I was more particularly interested in psychopathic conditions; doubtless one who would analyze her book to learn the exact proportion of diseases in general which had a grave effect upon the social maladjustments therein depicted would find far more than half the Richmond group to be afflicted in an important sense with some one or other of the *Morbi*. The great size of the psychopathic fraction in Miss Richmond's book is of particular value to us at this juncture because her book was collected rather with the aim of displaying methods of collecting data than with displaying the nature and treatment of the conditions themselves.

To sum up my contentions thus far, I would say that my view of the task of social case analysis is doubtless somewhat "medicated." Not only have I suggested a method which is immediately derived from medical studies, but I have been tempted to demolish what seems to be an erroneous pet view of social workers. That is to say, I want to replace the family as the unit of social inquiry with the individual as the unit of social inquiry. Wherever a family is in question, showing social maladjustment, I want the social service catalogues to contain all the different individuals in said family which may be found to deserve social analysis. I would even go so far as to think that most of the minors in these families with social maladjustments require individual analysis before a proper decision can be made and treatment rendered. Insisting upon the individual as the unit of interest in social case analysis, I then suggested, on the basis of medical studies, that the analysis of social maladjustment should proceed in a certain order. The order suggested was that of disease, ignorance, vice, delinquency and poverty. As partial justification for placing disease first in order of analysis, I called attention to the great number of cases in Miss Richmond's random series which presented important medical features which must indispensably be met if a complete adjustment is to be made.

I submit that this classification, however erroneous, is at least brief. I think there are few cases, even amongst the most complex, which the Psychopathic Hospital has afforded but can be successfully analyzed by entering the collected data under one or other of these headings. I find the allocation of these collected data to the various headings to be a very practical matter. Shall, or shall not, a physician be called in for more exact diagnosis and possibly for treatment? Here is the question which is brought up forthwith by the attempt to eliminate the *Morbi* from the logical scene of social maladjustment. But if the physician does not come in question, or if his work gets properly done, is there a remainder of difficulty which falls not to the physician's lot but to the lot of the educator, the expert, or the man who knows? Is there, perhaps, nothing the matter with this particular case save that the man cannot speak the language of his community? Can we, perhaps, solve the bread-winning question by a course in English? Is the whole or a part of the trouble due merely to ignorance, merely to the error, *e.g.*, of not knowing a certain language? Or, perchance, has there not been a false education in the matter of mental or physical hygiene; a false education, the effects of which can be destroyed or annulled by proper management? Or is the matter not so much an intellectual matter of education and false information as a matter of poor moral training, a matter of vice and bad habits — anything from the profoundest perversions, on the one hand, to biting fingernails, on the other? What we may need here, of course, is not education in the intellectual sense of the term but moral training, inhibition and habituation of the type shown, *e.g.*, in animal training. The field of the delinquencies is not exactly coterminous with the field of vices. I am not quite satisfied with the term *delinquency*, inasmuch as the group of evils which I place fourth ought to include all manner of legal entanglements and public disabilities in which the onus of responsibility may well be lacking; thus a man or woman in a divorce complication, or in a legal entanglement as to estates and incomes, may be legally maladjusted when he would not suitably be charged with crime in the ordinary sense, or even with delinquency. May it not be better to put the question thus? Suppose we can eliminate the necessity of a physician, and, again, the necessity of an intellectual guide, and, again, the necessity of a moral teacher; can we, fourthly, also exclude the necessity of calling in some expert in legal, public or official matters? If all four of these experts and their fonts of knowledge are to no purpose, then I will concede that the social

maladjustment might prove to be nothing more or less than poverty.

What is the cause of poverty, and what is its "cure"? This is surely one of the leading questions in every social worker's mind. When I look over material accessible to me both as director of the Psychopathic Hospital and as a citizen of a community, I seem practically to find that there are no cases of pure poverty. This is not tantamount to saying that it would be disadvantageous to raise the economic level. My point rather is that I am familiar with no case of social maladjustment in which the cause appears to be poverty alone. I am prepared to admit that there may be such cases, and indeed hope that there are great numbers of them, because I feel that their "cure" is among the easiest things we in this world now do. But, where your social case analyst proceeds beyond a superficial account of general family conditions and proceeds to an analysis of the individuals in the family, then I protest that in virtually all instances important deficiencies will be found to exist in one or more of these other directions.

I would like to penetrate the still more attractive vistas which open out in social case analysis. With the data concerning social maladjustment all in hand, how shall we analyze them? I have spoken of the major categories in which these data are likely to fall. Highly specialistic inquiries will have to be made to determine the details and subheadings under each of the categories mentioned. No one has, so far as I know, before attempted to classify the "Kingdom of Evil." Many attempts exist in philosophy to classify goodness and its types. From time to time, pessimists have appeared, but for the most part their pessimism has been of the blanket order, and indeed I think the majority of the pessimists will be found either psychopathic or else strongly under the influence of psychopathic suggestions. Now and again a psychopath like Rousseau or like Schopenhauer catches the ear of a generation and develops disciples whose work lasts a decade or two only to be swallowed by the unfailing optimism of the race. Whether the unfailing optimism of the race is or is not an evil, is perhaps subject to dispute. Herbert Spencer could use the data of Darwinism to show how the millennium was at least on the way. On the other hand, such persons as Haeckel and Nietzsche could use the self-same data of Darwinism for essentially materialistic and pessimistic purposes. On the whole, most of us mature and worldly persons feel that the world is compounded both of good and evil, and every one of us here at least

is engaged in some part of the battle against evil. If most of us were put to it for a percentile account of good and evil in the world, we should probably think goodness formed 51 per cent of the world all told rather than 49 per cent.

Yet, though no one apparently has attempted to classify the evils, can any one say that such classification is not the first duty of the sociologist? He will find at hand practically no attempts at classification of the field. For instance, in the ecclesiastical jurisprudence of the middle ages, something of importance can be found with respect to the sins and their relative deserts. No doubt, also, in certain works on criminology something can be found, though a recent superficial search of outstanding textbooks failed to indicate that much of a logical nature had been accomplished by criminologists as to the true nature and origin of those social maladjustments called crimes. Is not this, then, an attractive task lying before us as applied sociologists?

But suppose we had all these matters in hand and could describe to a jot the various subforms of evil, what would be the pragmatic, that is to say, the therapeutic, outcome? Should we be witnesses of mere ruins and wrecks without possible relief in action? Such might be the theoretical view, particularly of one inclined to pessimism, but those of us who at all practically deal with social maladjustments must inevitably hold otherwise; wherever we can nail our evil down to the platform of a particular group, there almost always something appropriate can be done; and if not, some value attaches to our knowledge that nothing can be done.

Should we eventually get in hand not only the bare verbal outlines of a classification of the "Kingdom of Evil" and some command of the process of diagnosis by which one would arrive at placing the social patient, what then? I should like to talk on about the still more general and philosophical situation in which we should then find ourselves. Consider, for instance, what the word *patient* means. Sometimes physicians are inclined to wonder why social workers call their objects of attention *patients*. For my part, noting the basic meaning of the term *patient*, namely, sufferer, victim, or person to whom something has happened, I cannot see that the physician is more especially entitled to the use of the term *patient* than the social worker would be entitled thereto. A patient, whether medical or social, is somebody who from the social point of view is almost always, if not always, in the passive voice. Somehow this whole question of society is

bound up in the question of the passive voice. What the socialists and even the anarchists want is not more than what everybody wants: such a freedom as will permit each person to be duly and profitably active in such wise that his activity is consistent with that of others. What is the source of inactivity, perverted activity, passivity, counteractive effort based on felt passivity, and the like? I have intended to suggest that the basis might lodge in disease, in ignorance, in vice, or bad habits, in delinquency or legal entanglements, and in poverty or other forms of resourcelessness, each one of which forms of evil is by itself removable or in some way to be wholly or partially compensated for. But whether you concede the philosophical basis of this subject, whether you regard its logic as not all well founded, whether you see in my contentions a great deal of medical prejudice and not too much social service insight, I hope you will concede that there ought to be some orderly approach in social case analysis, with or without the artificial aids proposed in my little arrangement of *Regnum Malorum*.

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EDITED UNDER THE PROVISIONS OF ACTS OF 1909, CHAPTER 504, SECTION 6, BY

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JULY, 1919

PUBLICATION OF THIS DOCUMENT
APPROVED BY THE
SUPERVISOR OF ADMINISTRATION.

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| [Presented at the opening of the laboratory at the Foxborough State
Hospital, June 2, 1919.] | |

SELECTED MEDICAL AND SCIENTIFIC STUDIES: FOXBOROUGH SERIES.

FOXBOROUGH LABORATORY OPENING.

This number of the Bulletin is devoted to addresses and papers read at the opening of the laboratory of the Foxborough State Hospital on June 2, 1919. The complete program of the exercises is as follows: —

- I. Albert C. Thomas, M.D., superintendent.
Introductory.
- II. H. C. Solomon, M.D.
Possibilities of Therapeutic Research in State Institutions for the Care of the Insane.
- III. Douglas A. Thom, M.D., in charge of reconstruction war work, National Committee for Mental Hygiene.
The Need of Laboratory Units in all State Hospitals for the Insane.
- IV. E. E. Southard, M.D., director, Massachusetts State Psychiatric Institute.
Plans of the Institute in Relation to State Hospitals.
- V. George M. Kline, M.D., director, Massachusetts Commission on Mental Diseases.
State Hospital Laboratory Units.
- VI. John I. Wiseman, M.D., in charge of laboratory, Foxborough State Hospital.
With the British Expeditionary Force.
- VII. Maj. George E. McPherson, M.D., United States General Hospital No. 34, Norfolk, Mass.
Neuropsychiatry in Army Camps.
- VIII. W. C. Rappleye, M.D., retiring pathologist, Foxborough State Hospital; chief of clinical laboratories and instructor in biological chemistry (elect), University of California Medical School and Hospitals.
Summary of Researches at Foxborough State Hospital.
- IX. Lawson G. Lowrey, M.D., chief medical officer, Psychopathic Department, Boston State Hospital.
Correlation of Data in Cases seen at the Psychopathic Department and Foxborough State Hospital.

X. W. C. Rappleye, M.D.

- (a) A Study of the Kidney Function in Senility. Boston Medical and Surgical Journal, Feb. 7, 1918.
- (b) A Note on Experimental Scurvy in the Guinea Pig. Boston Medical and Surgical Journal, July 18, 1918.
- (c) A Simple Application of the Volhard Principle for Blood Plasma Chlorides. Journal of Biological Chemistry, Vol. XXXV, No. 3, 1918.
- (d) The Kidney Function in One Hundred Cases of Hypertension. Boston Medical and Surgical Journal, Oct. 3, 1918.
- (e) An Undeveloped Opportunity for the Study of the Prognosis of Chronic Diseases. Medical Record, Oct. 19, 1918.
- (f) The Blood Urea Nitrogen in Catatonia. Journal of Nervous and Mental Disease, Vol. XLIX, No. 2, February, 1919.
- (g) Notes on the Effect of Intravenous Diarsenol. Journal of Laboratory and Clinical Medicine, July, 1919.
- (h) Blood Plasma Chlorides *versus* Renal Function.
- (i) A Method of preparing Sections of Entire Kidney for Microscopical Study.
- (j) The Kidney Function in Mental Diseases in Patients over Fifty.

XI. John I. Wiseman, M.D.

Review of Certain Wassermann Reaction Seropositive Cases at Foxborough State Hospital.

XII. Marion E. Kenworthy, M.D., senior assistant physician, Foxborough State Hospital.

- (a) Economic Problems presented by One Hundred and Fifty Cases of Dementia Præcox of Long Standing — State *versus* Home Care.
- (b) Problems of Active Committed Cases that prove to be Not Insane.

XIII. Ransom H. Sartwell, M.D., senior assistant physician, Foxborough State Hospital.

The Influenza Epidemic at the Foxborough State Hospital, 1918.

XIV. Fumio Tanaka, M.D., professor of laryngology and otology, Medical School, Okayama, Japan.

Absence of Lobus Olfactorius and Sclerosis of Cornu Ammonis (Foxborough State Hospital, Case 228).

XV. Urasuke Noda, M.D., professor of psychiatry, Medical School, Kyoto, Japan.

Glioma of Spinal Cord (Foxborough State Hospital, Case 930).

[NOTE. — Of the papers on the above program, Nos. VI, VII, IX, X (a) to (h), inclusive, and XIII appear in this Bulletin.]

Wall charts and photographs were in display, showing (a) Foxborough material and (b) selected teaching and research material arranged by the Psychiatric Institute. The charts and photographs are not reproduced in the Bulletin.

The Foxborough State Hospital was opened in 1893 as a hospital for dipsomaniacs and inebriates and was used as such until 1905 when a department for the mentally sick was established, a building being set apart for their use. All such patients were transferred to Foxborough from other hospitals.

In 1914 provision having been made by the Legislature for a separate institution, all inebriates were transferred to the Norfolk State Hospital. Foxborough State Hospital since that time has been devoted wholly to the care of the mentally sick. This hospital is now being more fully developed, appropriations having been made and considerable sums of money expended in the past few years for alterations and new construction.

WITH THE BRITISH EXPEDITIONARY FORCE.

BY JOHN I. WISEMAN, M.D., FOXBOROUGH STATE HOSPITAL.

In April, 1917, it will be recalled, a British Mission visited the United States to confer with this government. They advised and suggested ways in which we could best assist the Allied cause while our own armies were being raised, trained and transported to France.

One of their urgent requests was for immediate medical assistance, as England even at this time had reached the end of her trained medical resources. To this request our government responded by calling into service several base hospital units and sent them to England and France.

Among these units was Base Hospital No. 5, popularly known in New England as the Harvey Cushing unit, together with units from Chicago, Philadelphia and Cleveland. In addition to the base hospitals there was the need for officers to replace the casualties which constantly occurred at the front, and to meet this requirement our government sent over groups of men known as casals to serve with British divisions. It was with this group that I was placed on entering the service and for nineteen months served with the British forces.

The usual procedure on reaching London was to report to the American Liaison Officer who was attached to the British War Office and who arranged transportation to France or attachment to one of the military hospitals in England, Scotland or Wales.

In going to France one usually crossed by way of Folkstone to Boulogne on the regular leave boats which plied daily between these ports. At Boulogne one reported to the Director of Medical Service and were attached to divisions or units at the front, first being equipped with steel helmets, gas respirator and identity tags. In this manner I was attached to the 17th Division, British Expeditionary Forces, which then occupied the line at Arras. Here, while attached to field ambulances, we received training in military procedures and then took our places as regimental or battalion medical officers in other units of the division.

The medical arrangements of a British division are as follows: —

A division at full strength consisted of about twenty thousand men arranged in the following units: —

- Three brigades of infantry.
- Two brigades of field artillery.
- Two field companies of engineers.
- One ammunition column.
- One supply train.
- Three field ambulances.
- Divisional headquarters.

Each unit, aside from the field ambulances, has an attached medical officer whose duties are to keep close supervision over the health of the unit, and treat the sick and wounded. For this purpose he holds a daily sick parade in the morning, makes daily inspections of the trenches or billets, paying particular attention to the sanitary arrangements and sanitary discipline of the unit and trains the stretcher bearers in first-aid work. He is responsible for the collection and treatment of the wounded from the front line to the regimental aid post. From this point the field ambulances serve as connecting links to the casualty clearing stations. The field ambulances provide collecting stations for the sick and wounded, shelter, medical attention and rapid evacuation to the casualty clearing station. The casualty clearing stations are the active surgical centers, where the first attempt to provide adequate surgical and medical treatment is made. They are located several miles in the rear and are arranged in groups so as to provide special kinds of treatment, *i.e.*, medical, surgical, venereal, infectious and contagious, nervous and mental, etc. They were situated near a rail head with a spur track running to the hospital for evacuation by hospital train to the base. In the fall of 1917, the 17th Division moved into Flanders where the Passchendale offensive was being carried on, and in this region I had my first experience as a regimental medical officer in action. The only places available for aid posts in this area were the so-called German pill boxes, which were strongly made of concrete, reinforced with steel rails. The aid post which I took over from the battalion I relieved had been struck by a shell, killing the medical officer and most of his personnel. Their bodies we found lying unburied about the entrance. The following morning we established our aid post in an undamaged pill box, where we remained until relieved a few days later.

As psychiatrists, our interests are centered more upon the nervous and mental manifestations produced by warfare than the details of battle, and with this in mind I would like to mention some of the interesting mental phenomena seen in the wounded. An interesting experience was to note the state of contentment, satisfaction, even happiness and mild exhilaration which developed in men shortly after being wounded. I recall reading recently an account of one of the officers of the 26th American Division who, in passing a dressing station after an action, heard the men singing "A Perfect Day." Such reactions have a sound psychological basis and may be explainable on the ground that on receiving a wound there is an immediate relief of the nervous and mental tension, worry, apprehension and fear with which practically every man enters battle. The wound affords a natural and honorable escape from conditions almost unbearable to many individuals, besides holding out as it does a promise of returning to England and home to convalesce. The most frequent inquiry that the wounded Tommy would make to the doctor was not of the severity of his wound or how long he would remain in the hospital, but would it take him to "Blighty."

In marked contrast to the wounded were those unwounded men brought to the aid post with what is popularly known as "shell-shock." These poor unfortunates frequently had to be carried or half-supported on their journey from the line. They trembled in every limb, had an anxious, startled expression and usually stuttered to such an extent that intelligible speech was almost impossible. In the areas forward of the casualty clearing station no provision was made for the treatment of the nervous and mental cases. There was no divisional psychiatrist as in the American Expeditionary Forces. In quiet sectors, however, where the aid posts accommodations were large enough to allow it, mild incipient cases of tremor and other neuroses were frequently retained, and by means of rest, sleep, warm food, persuasion and suggestion, it frequently occurred that a neurosis was aborted and the man returned to duty. This was impossible, of course, under active conditions and in severe cases. It was generally well recognized that incipient cases in their passage through the various stations from the front line to the base would often elaborate numerous new symptoms and become firmly fixed neurotics requiring months of treatment to cure. During the summer of 1918 I had an opportunity of spending

several weeks at the Maudsley Nervous Clearing Hospital in London, which was under the direction of Lieut. Col. Fred W. Mott, R.A.M.C. This was a new hospital under construction at the outbreak of the war for the study of mental diseases. It was a part of the King's College Hospital, and when completed in 1915 it was devoted to war purposes. Its function was very similar to that of our own Psychopathic Hospital here in Boston in that it acted as a clearing station for the nervous cases coming from France, which, after study, were passed upon by a medical board and then sent to other hospitals or convalescent homes near their places of residence. Wards were provided for continued study and treatment of selected cases so that any unusually interesting group could be retained for an indefinite period. The majority of cases received here were of the functional group, consisting of neurosis, neurasthenia, traumatic hysteria and the functional paralysis of limbs from disuse following wounds. Mott's method in treating these functional cases consisted principally of strong counter-suggestion, reinforced with electrical stimulation of muscles, purely for its psychic effect, passive and active exercise, rest, baths, massage, gardening and light industrial work for the neurasthenics, deep breathing and lip exercises for the speech neurotics. He did not favor hypnotism nor did he think psychoanalysis advisable or necessary as a rule. His assistant, Captain Golla, carried on some interesting experiments with the galvanometer and frequently demonstrated its usefulness in the diagnosis of cases of hysteria. During my short stay at the Maudsley Hospital I saw case after case from the Pension and Disability Board referred to Mott for examination. These were usually men who had been treated for long periods, whose wounds were completely healed but who had been left with paralyzed, impaired or poorly functioning limbs, contractures, etc., and who had undergone months of treatment as organic cases. In many of these cases the cures he effected were marvelously rapid and striking, as he recognized the functional nature of the disease. From these cases he has collected a museum of sticks, crutches and mechanical supports of one kind or other with which they came to the hospital. At that time Mott felt that there were probably thousands of these unrecognized cases in the hospital and convalescent camps in England, requiring for their cure only the service of a neuropsychiatrist trained in the treatment of such cases.

THE INFLUENZA EPIDEMIC AT THE FOXBOROUGH STATE HOSPITAL, 1918.

BY RANSOM H. SARTWELL, M.D.

The population of the hospital at the time of the epidemic was 536. Of this number, 424 were patients and 112 were employees.

The disease was brought to the hospital by 2 male employees, who, on September 13, visited Boston. Two days following this one of these men developed influenza and two days later the other man became ill. On the 20th, or four days after the disease made its first appearance here, the wife of the man who first became ill developed the disease. She was employed in the general kitchen as a cook, where about 20 patients (both male and female) were employed and which adjoined the central dining room where the greater number of our patients ate. Up to this time we had been entirely free from the disease among our patient population, but, as this cook had working with her patients from practically every ward in the hospital, the infection quickly disseminated from this place throughout the entire institution, involving both patients and employees.

The epidemic reached its climax in the number of new cases affected in about two weeks, and then the number of new cases developing each day gradually decreased during the following two weeks when the last case of the epidemic proper developed, although there were sporadic cases which developed for three months following this.

As soon as symptoms were observed the female patients and employees were isolated in a ward and the male patients and employees were isolated on one floor of a ward. As far as possible, the cases developing pneumonia were cared for in rooms and the other cases separated by screens between the beds. Masks and gowns were worn and all precautions possible were taken to prevent the spread of the infection.

Eighty-six patients, or about 20 per cent of the patient population, and 35 employees, or about 34 per cent of the employees, developed influenza. Beginning September 27, eleven days after the first case developed, as a prophylactic measure we began

inoculating employees and patients with vaccine as furnished by Dr. Timothy Leary of the Tufts Laboratory. (Up to this time 8 patients and also 8 employees had developed the disease.)

Among the patients, 226 were vaccinated and 198 were not vaccinated. Among the employees, 83 were vaccinated and 39 not vaccinated. The method of chance was used in selecting patients for vaccination, but upon analysis approximately half of each ward were vaccinated. The following tables will show the prevalence of influenza among the vaccinated and non-vaccinated groups.

Vaccinated Group (226 Patients, 83 Employees).— Number who developed influenza, 23 patients, or about 10 per cent, and 20 employees, or about 24 per cent.

| | | Patients. | Employees. |
|---------------|-----------|-----------|------------|
| September 28, | | — | 2 |
| 29, | | 1 | 4 |
| 30, | | 2 | 3 |
| October 1, | | 3 | 1 |
| 2, | | — | — |
| 3, | | 2 | — |
| 4, | | 3 | 4 |
| 5, | | 2 | 1 |
| 6, | | — | — |
| 7, | | 2 | 1 |
| 8, | | 1 | — |
| 9, | | 2 | 2 |
| 10, | | 3 | — |
| 11, | | — | 1 |
| 12, | | 1 | — |
| 13, | | — | 1 |
| 14, | | 1 | — |
| | | 23 | 20 |

Number of influenza patients who developed pneumonia, 8 patients, 5 employees. Number of influenza patients who developed pneumonia and died, 2 patients, 3 employees. According to this, about 30 per cent of the influenza patients developed pneumonia and 38 per cent of those who developed pneumonia died.

Unvaccinated Group (198 Patients, 39 Employees). — Number who developed influenza, 64 patients, or about 32 per cent, and 14 employees, or about 36 per cent.

| | | Patients. | Employees. |
|-----------|---------------|-----------|------------|
| September | 16, | — | 1 |
| | 17, | — | — |
| | 18, | — | 1 |
| | 19, | — | — |
| | 20, | — | 1 |
| | 21, | — | — |
| | 22, | 1 | — |
| | 23, | — | — |
| | 24, | — | — |
| | 25, | 2 | 2 |
| | 26, | 2 | 3 |
| | 27, | 3 | — |
| | 28, | 3 | — |
| | 29, | 1 | — |
| | 30, | 9 | 1 |
| October | 1, | 5 | 2 |
| | 2, | 12 | — |
| | 3, | 3 | — |
| | 4, | 4 | 1 |
| | 5, | 3 | 1 |
| | 6, | 7 | — |
| | 7, | — | — |
| | 8, | 1 | — |
| | 9, | 3 | 1 |
| | 10, | — | — |
| | 11, | 3 | — |
| | 12, | 1 | — |
| | 13, | 1 | — |
| | 14, | — | — |
| | | 64 | 14 |

Number of influenza patients who developed pneumonia, 13 patients, 4 employees. Number of influenza patients who developed pneumonia and died, 5 patients, 1 employee. In other words, about 22 per cent of the influenza patients of this group

developed pneumonia and about 35 per cent of those who developed pneumonia died.

In comparing the above tables one will notice that a smaller percentage of both patients and employees developed the disease among the vaccinated than among the non-vaccinated group. Of course eleven days had elapsed before the vaccine was given, which might be said to account for the larger percentage among the non-vaccinated group, due to the longer length of time during which they were exposed. But, by considering only the cases which developed among both groups after September 28, we find, covering the same period of time, that 26 per cent of the non-vaccinated group developed influenza against 14 per cent among the vaccinated group.

The percentage of influenza patients developing pneumonia and also the percentage of deaths among those who had developed pneumonia was greater among the vaccinated group than among the non-vaccinated group. This higher mortality may be accounted for by the fact that among this group were several patients who previous to developing influenza were suffering from a chronic cardiac or respiratory trouble. For instance, among this group was a male employee who had suffered from pulmonary tuberculosis for several years. He developed pneumonia at onset and died on the third day. A female employee with a chronic cardiac condition, with asthma, developed pneumonia at onset and died within forty-eight hours. A male employee with organic heart disease (mitral insufficiency) developed pneumonia on the sixth day and died eight days later; also 3 men over seventy years of age who developed pneumonia at onset and died within a few days.

Taking everything into consideration, we feel that the vaccine was of value as a prophylactic measure but it had practically no influence upon the morbidity or mortality, which, I believe, is in accord with other observers.¹

Symptoms observed. — The disease was invariably ushered in with a chill, or a chilly sensation, headache, backache, flushing of the face, lassitude and indifference, and, in some cases, apathy and somnolence with fever of about 102° or 103° F. In part of our cases there were symptoms of acute coryza with injection of conjunctivæ and in a few there were symptoms suggesting bronchitis, with cough and retrosternal pain. Sore throat or gastrointestinal disturbances were not common. The respiratory rate in uncomplicated cases was not markedly increased. It was

quite noticeable that the pulse rate did not increase in proportion to the temperature and in very few cases (uncomplicated) did it reach over 100, the average pulse with temperature of 102° or 103° being 85 or 90. As temperature fell the pulse became slower and in most cases was below 70 when temperature reached normal. In a few cases there were marked bradycardia. I have in mind one male patient whose illness was ushered in with a temperature of 104° F., with pulse rate of 100. The second day his temperature dropped to 103° F. and pulse rate to 90. The third day his temperature was 102° and pulse 75. The temperature gradually subsided until the seventh day, when it reached normal and the pulse rate had gradually decreased until it had reached 35. It remained between 35 and 40 at this time for six days when it gradually became more rapid, reaching 60 at the end of six weeks. This patient, aside from the unusually low pulse rate, presented no unusual symptoms and made a good recovery. This case of marked bradycardia and a tendency in all of our cases to a slow pulse was a very noticeable feature in our epidemic.

In a majority of uncomplicated cases the temperature remained about 102° to 103° for about six days, when it dropped to normal and convalescence began.

During the course of the disease, in about 50 per cent of the cases, there developed early a dry cough which later was accompanied by expectoration of mucopurulent material with physical findings only of a moderate bronchitis. Sweating was a prominent feature. Epistaxis was observed in about 10 per cent of the cases, the severity of the illness apparently having no influence upon it, as it occurred as frequently in the mild as in the more severe cases. Delirium was not present in any of our uncomplicated cases.

Convalescence. — This was characterized by depression, apathy, lack of initiative, inability to concentrate, muscular weakness with an unusual fatigability both mental and physical. These findings, I believe, are in accord with those of most writers on the subject, and Burr² states that psychasthenia and neurasthenia are so common following influenza that they may be regarded as part of the disease rather than a complication. This condition persisted anywhere from two to five or six weeks after temperature had become normal.

Post-influenza Psychosis. — The exact percentage of influenza patients who developed a psychosis is difficult to determine but

is probably very small. Fell reports approximately 2,500 cases of influenza among soldiers treated at the Walter Reed Hospital, Washington, D. C., and from this number only 4 developed a psychosis following their illness.

In our epidemic, there was no change in the mental condition of our insane patients after recovery from influenza had taken place. No so-called "post-influenza psychosis" developed among our cases here, but since the epidemic 3 cases have been admitted to the hospital in which a recent attack of influenza seemed to have played a very important rôle as a causative factor of their psychoses.

CASE No. 1. — An Italian female, age twenty-five, married, with history of four normal pregnancies, the last one being eight months previous to onset of her mental illness. No history of insanity, tuberculosis, carcinoma or diabetes could be obtained in either parental tree. Children normal. Patient had always been healthy and normal mentally. She was admitted here Oct. 10, 1918, and had been disturbed for two days previously. She developed influenza two weeks previously, which was apparently very mild. Here she was confused, hyperactive, destructive, noisy, and emotionally unstable, at times elated, and at other times depressed, the elation predominating. She had occasional auditory hallucinations and vague delusions of poisoning. She continued in this condition until her death eleven days after admission. Autopsy findings showed evidence of acute cardiac dilatation (right side) and bronchopneumonia.

The cavity of the right ventricle dilated, walls paper-thin in places, muscles separated and displayed slightly gray epicardium. Lower lobe of right lung was pinkish gray in color, with anterior and posterior purplish mottling. Resistance increases with lack of crepitation in some areas. Cut surface showed moderately discrete purplish red patches and between these areas lung tissue was pinkish red. There were other areas which resembled gray hepatization. Mucous membrane of bronchi injected. Specimen in darker areas about bronchi floated. Left lung and upper and middle lobe of right lung negative.

CASE No. 2. — A West Indies negro, age thirty-two, whose family history is negative so far as could be ascertained except that it is said father drank to excess. Patient is said to have been a phlegmatic individual, but there is no history of previous episodes or difficulties. Had no serious illness. Was a steady worker and made average economic progress.

He developed influenza the latter part of September, 1918, and two weeks later was taken to the Boston City Hospital, was there seventeen days and was discharged as improved. Their diagnosis was influenza, myocarditis, and general ascites. During the next eight weeks he stayed at home, but was depressed and could not work. He secured a position

in a chocolate factory but only worked a few hours. Has not attempted to work since. Says, "My nerves became low and I couldn't work."

About this time he became more religious than usual and began to develop ideas of self-accusation and poisoning. He was readmitted to the Boston City Hospital Jan. 23, 1919, and his condition diagnosed as "post-influenza depression," and three days later was sent to the Psychopathic Hospital in Boston. There he appeared depressed but showed periods in which he was restless, noisy and impulsive. Was admitted here Feb. 5, 1919, and the salient features manifested here until recently have been depression, impulsiveness, psycho-motor inactivity, delusions of self-accusation, of influence and an occasional olfactory hallucination. He is still in the hospital and the depression of late has given place to indifference, silliness, and he is developing delusions of power in place of the self-accusatory ideas, and impulsiveness and ideas of influence are more marked. During the early part of his psychosis the symptoms were very suggestive of manic depressive (depressed phase), but the recent developments in his case point quite definitely to dementia præcox.

CASE NO. 3. — An adult white male, forty years of age, of Finnish birth and parentage. Occupation, seaman. Made good economic progress and there is no history of any previous mental disturbance or severe illness. Negative history as to alcohol. One brother epileptic and insane, another brother, age forty-five, has a "hasty disposition" and twenty-two years ago suffered for six months with a mental illness characterized by depression, with recovery, and there have been no subsequent attacks. Family history otherwise negative.

About the middle of last November, while out on a voyage, he developed influenza and stopped work about three weeks, improving so much that he resumed work. He, however, felt tired, depressed and had difficulty in thinking. He continued to work for about three months when he had to stop. Soon after he went back to work, after having had influenza (about the middle of December), there was a fire on the ship and during the investigation which followed he signed a statement relative to the nature of the fire. Soon after this he became worried and developed ideas of reference, thinking that two Russian men, whom he saw talking together on board the ship, were talking about him and accusing him of having made a false statement regarding the fire. He continued to be annoyed and later he developed auditory hallucinations. He could hear voices which said he was to be killed and that he had made discourteous remarks about the American flag. He believed they accused him of this and also inserted articles to this effect in the newspapers in order to influence the American people against him so that they would allow his enemies to kill him when they arrived in Boston. As a result of these hallucinations and delusions of persecution, he became so disturbed and discouraged that he attempted suicide; first by trying to jump overboard and then by cutting his throat. He was admitted to this hospital from the Psychopathic Hospital, Boston, March 21, 1919, about ten days following his suicidal attempt. During

the first two months of his residence here he appeared depressed, was apprehensive, rather inactive, standing in one corner of the ward, with head lowered, for hours at a time. There was a question of motor retardation. He expressed many auditory hallucinations and fairly well systematized delusions of persecution. Since then these symptoms have gradually subsided and for the past six months he has been free from hallucinations and delusions; has become more active; appears to take a normal interest in his surroundings and depression has disappeared. He has good insight and apparently has made a good recovery.

Of course, from these three cases no conclusions can be drawn, but it might be interesting to note that in two cases out of the three depression was a prominent feature, especially early in the course of the psychosis. In one case hallucinations and consequent delusions were also very conspicuous and in the other they were present but not prominent. The case in which the delusions and hallucinations were prominent, contrary to expectations, recovered, while the other case became chronic. In only one case out of the three could heredity be traced.

It might be appropriate to review here some of the recent reports in studies of the post-influenza psychosis.

Menninger³ studied 80 cases at the Boston Psychopathic Hospital and his report shows that the predominance of the dementia præcox group is quite noticeable and that the duration of the influenza illness had no appreciable influence in precipitating a mental disturbance. The predominating symptoms in this series were hallucinations, delusions, schizophrenia. The schizophrenic symptoms were not confined to the dementia præcox cases exclusively but were also present in cases which made rapid recovery and were clearly cases of delirium. Depression was not a common symptom.

Fell⁴ reports a series of 20 cases studied at the Walter Reed Hospital, Washington, D. C. He also speaks of the prevalence of præcox symptoms in cases who recovered. In his cases depression was a very common and prominent symptom.

Harris,⁵ in reporting 17 cases studied at the Worcester State Hospital, gives hallucinations and delusions as the most common symptom and excitement and destructive tendencies as being more frequent than depression.

As shown by the following tables the rôle played by heredity as a causative factor does not appear as important as was generally expected:² —

Table showing Influence of Heredity in Three Series.

| SERIES. | Number Cases studied. | Number showing Pre-disposition. | Number not Predisposed. |
|---------------------------------------|-----------------------|---------------------------------|-------------------------|
| Boston Psychopathic Hospital, | 80 | 32 | 48 |
| Walter Reed General Hospital, | 20 | 9 | 11 |
| Worcester State Hospital, | 17 | 8 | 9 |
| | 117 | 49 | 68 |

In the three series there were 117 cases; in 49, or 41½ per cent, heredity could be traced, while in 68, or 58½ per cent, no predisposing factor could be traced.

In considering the dementia præcox group one would expect that this group would be made up mostly of persons predisposed to insanity in which influenza had acted only as an exciting factor in activating latent dementia præcox, but these studies do not bear this out, as the following table will show: —

Dementia Præcox Group.

| SERIES. | Number Dementia Præcox Cases. | Predisposed. | Not Predisposed. |
|---------------------------------------|-------------------------------|--------------|------------------|
| Boston Psychopathic Hospital, | 26 | 13 | 13 |
| Walter Reed General Hospital, | 5 | — | 5 |
| Worcester State Hospital, | 9 | 5 | 4 |
| | 40 | 18 | 22 |

In the three series there were 40 cases diagnosed as dementia præcox, and of these, 18 cases, or 45 per cent, showed predisposition (morbid family history, previous episodes or defective mental make-up), while in 22 cases, or 55 per cent, no predisposing factor could be traced.

CONCLUSIONS.

From this study the following points of interest seem worthy of note: —

1. Influenza vaccine in our experience was of value as a prophylactic measure, but the morbidity and mortality were not reduced by use of the vaccine.

2. A tendency to a slowing of the pulse was noted during the acute febrile period in all of our cases, and in one case there was marked bradycardia.

3. During convalescence, depression, with lack of initiative, and easy fatigability (mental and physical) was a prominent feature.

4. Influenza had no effect upon the mental state of the insane patients with developed psychosis.

5. The percentage of influenza patients who developed a psychosis as a result of influenza is comparatively small.

6. Schizophrenic symptoms are common in post-influenza cases, even in cases which prove not to be dementia præcox.

7. Heredity as a causative factor in insanity following influenza does not seem important, predisposition being traced in less than 60 per cent of the cases.

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ECONOMIC PROBLEMS PRESENTED BY ONE HUNDRED AND FIFTY CASES OF DEMENTIA PRÆCOX OF LONG STANDING—STATE *v.* HOME CARE.

BY MARION E. KENWORTHY, M.D.

Both the medical and lay public have become familiar with the term "feeble-mindedness" and with all that it signifies in a medical, social and economic way, and as a result of this awakening steps are being taken which promise to bring the problem of feeble-mindedness under control. It is equally important that the term "dementia præcox" should become generally understood, and since the problem of dementia præcox lies second in importance only to that of feeble-mindedness, — for statistics show that patients in the dementia præcox group represent approximately one-quarter of the yearly admissions to our State hospitals, — the economic aspect in the care of this group is an important one, especially since the disease is essentially one of young adult life, in which early deterioration of the mental faculties occurs, rendering the individual economically unfit, and necessitating his prolonged care in a hospital for the mentally ill over a period of twenty, thirty or even fifty years.

The economic problem of the dementia præcox group embraces many phases, but most striking is the expense involved in the care of this class, for they constitute a large percentage of the patients who crowd our hospitals, making necessary the constant increase of the State's facilities for caring for the mentally diseased, — the building of new wards, of new buildings, and, periodically, the creating and equipping of entirely new hospitals.

In order to furnish a concrete and fairly simple example of the problem in its economic phase, a group of 150 dementia præcox patients has been studied who have reached the age of fifty or more.

This group, chosen at random, consists of 72 men and 78 women. The present ages range between fifty and eighty-one; the average present age is 63.49.

The total number of years residence for the men is 1,625.4, for the women 1,753.85. The aggregate years of hospital care represented by this group is 3,379.24.

Assuming that the average per capita for the past twenty years has been approximately \$3.94 per week, or \$213.24 per year (compiled from old yearly reports of State Board), the total cost to the State for care of this group alone is \$720,591.27, an average of \$4,803.94 per person.

In compiling these figures, the years of care in the public institutions, *i.e.*, almshouses, etc., have not been considered, although many of the patients have been at some time cared for by funds of various public charities. It was also impossible in compilation of these data to obtain definite information of the exact number of years that the individuals were incapacitated and unable to contribute to their own support prior to admission.

A rough average places the duration before admission as 4.7 years. If it were possible to compute the economic loss to the community by these individuals through the period of incapacity extramurally plus that of the intramural care, the figures would be even more conclusive.

It is possible to deduct from this brief examination of this group of 150 cases that the economic problem of care is a stupendous one; that the only satisfactory way of combating it is to further the education of the public in the method of prevention and to bring about earlier commitments, in order that occupational measures and other forms of therapy may be given an opportunity to prevent the profound deterioration which is wont to progress rapidly if the unfortunate individual is allowed to follow his or her own inclinations.

PROBLEMS OF ACTIVE COMMITTED CASES THAT PROVE TO BE NOT INSANE.

BY MARION E. KENWORTHY.

It has been the experience of all those who, for any length of time, have been associated with an acute reception hospital to find on close study of some of the cases that are committed to the State Hospital that they are not properly classed as insane, although many of their gross objective symptoms would lead to a snap diagnosis of insanity.

To illustrate this point, I have chosen from a group of our more recent admissions three cases in which the condition at the time of admission simulated insanity, and who, under subsequent study, were diagnosed as not insane.

I have selected this particular group study because eventually, as a result of their physical illnesses, death occurred while under care and it was possible to obtain permission for post-mortem examination, hence our opportunity to correlate the objective mental and physical findings with those of the post-mortem findings.

Following is a brief description of the case histories, mental and physical findings and the post-mortem correlations.

CASE I. — As observed by the committing physicians: "He appeared to understand at times what is wanted and what is said, but mainly dazed and frequently appeared to notice nothing unless roused, generally resistant to persuasion and coercion."

The patient was a Russian, twenty-eight years of age. History as obtained from outside sources was meager. He emigrated to United States in 1914. Had been steadily employed until three days before admission. One week prior to admission it is reported that he was seen to destroy a \$5 bill while standing on the street. Three days before coming to the hospital, at the home of a friend, he complained of headache, and because he felt ill asked to be allowed to go to bed; he failed to show subsequent improvement, ate poorly, and gradually became more stupid. In the admission office he sat slouched down in his chair, eyes half closed, breathing heavily. He was somewhat resistive to passive movements and appeared rather weak, apparently due to his failure to take much nourishment.

On preliminary examination the heart showed no enlargement, no evidence of organic valve lesions. Pulse rate, 86. Respiratory rate slightly

increased 26 per minute. Temperature, 98.4°. But except for slight roughened breathing in left apex, bronchial in type (apparently an acute tubercular lesion), nothing remarkable was found. Some difficulty in walking was experienced, no subjective symptoms were complained of. Throughout the day he continued restless, the only statement obtained from him was a complaint of headache. On feeding, apparent difficulty in swallowing was noted.

On re-examination on the following morning facies were drawn and anxious, pupils equal, regular in outline, reacted within small arc to light and accommodation. Conjunctiva slightly injected. The tongue protruded in median line, slightly coated, no tremor. Tonsils somewhat hypertrophied and had a congested appearance. Voice low pitched and husky. Chest narrow and flat, an involvement of both apices was found. Heart not remarkable. Pulse, 100. Systolic blood pressure, 132. Diastolic, 70. Abdomen negative. Voluntary movements slowly performed, rather general muscular rigidity on passive motion. Reflexes showed no deviation from normal. No Kernig, gait was unsteady.

At 4 P.M. of second day there appeared a slight rise in temperature corresponding to tubercular picture presented in the lungs. Temperature, 99; pulse, 84; respiration, 24.

During second night he appeared to lapse into semiconscious state. Restlessness continued.

Third morning: temperature, 99.8; pulse, 88; respiration, 26.

During examination he was restless, kept right hand and arm in constant motion; pupillary disturbances observed at this time. The right pupil was much larger than left. Both reacted to light within a very small arc. Eye grounds were negative; ears negative except for evidence of old scar in right drum membrane. No evidence of mastoid involvement. Suffered a slight hemorrhage from left nostril during morning. Neck appeared somewhat stiff. Chest showed increased evidence of disturbance with a general scattering of fine and medium moist râles. Heart continued negative. He appeared unable to move the left arm voluntarily, and the extremities of the right side were resistive to passive motion. The normal reflexes of the upper extremities were present. The knee jerk and Achilles reflexes were present and active, on left, ankle clonus present and a questionable Babinski.

The condition existing was apparently of meningitic origin, probably tubercular in type, and on lumbar puncture 25 cubic centimeters of clear spinal fluid was removed under increased pressure, showing a cell count of 350.

Differential Count. — Polymorphonuclear leucocytes, 60 per cent; small mononuclear leucocytes, 28 per cent; large mononuclear leucocytes, 12 per cent.

Examination of Blood. — White count, 15,500; reds, 5,670,000; hemoglobin, 90 per cent.

Differential Count. — Polymorphonuclear leucocytes, 83 per cent; large mononuclear leucocytes, 9 per cent; small mononuclear leucocytes, 9 per cent; eosinophiles.

Wassermann on spinal third, negative; Wassermann on blood serum, doubtful.

Urinalysis. — Color, light amber. Specific gravity, 1,030. Negative for sugar and albumen and microscopically.

He continued in a comatose state throughout the day until death ensued.

Post-mortem findings established the cause of death as tubercular meningitis with acute hydrocephalus.

Stain of exudate obtained from region of the pons showed tubercle bacilli. Fluid from the base of the brain, third ventricle and spinal canal, in culture, showed numerous tubercle bacilli.

To summarize: The patient was a foreigner with brief residence in the United States and concerning whom little information could be obtained. The subjective symptoms complained of were headache and feeling of general illness; objectively at time of admission he appeared lethargic and dull, voice was husky, he was somewhat resistive to passive motion; showed signs of general physical weakness, evidence of active pulmonary tuberculosis with slight increase in respiratory rate but with normal temperature and pulse. During his four days' hospital residence he showed a rapid progression of symptoms with evidence of definite meningitic involvement on the second day, with restless semiconsciousness, disparagement in size of pupils, inconstant ankle clonus and Babinski, and apparent involvement of the left extremities with loss of power.

Lumbar puncture revealed fluid under pressure with cell count of 350.

The case illustrates very well the necessity of utilizing a complete and detailed examination in all of our cases, but especially in cases of this type who primarily are difficult to converse with because of their defective grasp of English. Casually observed in the admission office the case resembled in his reactions those of a catatonic præcox, and it is easy to conceive that if he had not been carefully studied with all the means at hand, it is very probable that the case would have gone on until death intervened, summarily diagnosed as insane.

CASE II. — This case illustrates another type of the chronically ill individual who had been a semi-invalid for over a year. She was believed by the attending physician to be insane and was committed to the hospital as a general paretic.

The family history was essentially negative; the father, an alcoholic, died at fifty-three. Mother living and well. Patient, one of five living children. No nervous or mental diseases known.

Prenatal condition of mother excellent and birth of the patient was normal; developmental period was uneventful. She obtained a common school education and showed evidence of the usual degree of intelligence. Catamenia were established at the age of thirteen.

Her first marriage occurred at the age of twenty; one pregnancy, with normal delivery at full term. A pregnancy five years ago resulted in an abortion at the third month following a strain, the physician in charge curetted to control hemorrhage. One year ago another curettage was performed, for the informant states that she flowed continuously during the four intervening years.

During the past three years patient showed marked physical weakness, and for the year preceding her commitment she was unable to care for herself, and for seven weeks was confined in bed, the last two weeks of her care in bed at home she seemed restless. No ideas of poisoning, reference, persecution or of self-importance observed, and no hallucinations occurred; she was, however, emotionally unstable, and once threatened to strike her husband, who was not on good terms with her.

On admission, she was restless, attention was hard to obtain and to hold.

Replies were relevant and coherent, no evidence of hallucinations or delusions were obtained.

Physical examination revealed a fairly well-developed and nourished woman, showing profound anæmia, with skin of yellowish tint. Pupils equal and reacted readily to light and accommodation. A coarse nystagmus was present inconstantly, and appeared to be due to muscle weakness.

Teeth fair, pyorrhea marked.

Lungs were negative, respiration, 24.

Heart apex in fifth interspace, right border 10 centimeters and left 3 centimeters from midsternal line. No murmurs. Sounds somewhat muffled. Pulse rate, 84. Systolic blood pressure, 180; diastolic, 62.

Examination of abdomen negative.

Moved lower extremities with great difficulty, muscles were flabby and weak in power. Co-ordination of upper extremities good, but tired easily.

The knee jerks, Achilles and Plantar reflexes were present and equal. No abnormal reflexes were found. No sensitiveness of nerve trunks elicited, but patient appeared too weak to stand or to walk. Tactile and thermic sensations not impaired, and all the cranial nerves were negative.

Vaginal examination revealed a pale yellowish hued mucous membrane, with a foul smelling sanguinous discharge. The vaginal walls were relaxed, scars and an old laceration were found, in the right cul-de-sac a few palpable discrete glands were found. The cervix, which was somewhat displaced anteriorly, was baggy and somewhat hypertrophied, reddish purple in color, and showed a small area of excoriation. The fundus, which was posteriorly placed, showed little evident enlargement.

Blood examination showed reds, 2,168,000; white, 4,400; hemoglobin, 40 per cent.

Differential Count. — Polymorphonuclear leucocytes, 62 per cent; large mononuclear leucocytes, 10 per cent; lymphocytes, 25 per cent; eosinophiles, none; mast cells, none; few platelets.

Slight macrocytosis, moderate poikilocytosis, anisocytosis and achromia marked. No stippling, no normoblasts or megaloblasts seen. Wasser-

mann on blood serum negative. Mentally her attention continued to be hard to obtain, she was restless, frequently tossing about the bed. Her immediate grasp was good, memory was apparently well retained as far as it was possible to hold her attention, judgment concerning her condition was good. Delusions and hallucinations denied.

One week after admission the blood picture remained unchanged microscopically, but the hemoglobin had fallen to 20 per cent. She appeared weaker, took food with difficulty, and was much fatigued by nursing care. About this time some tremor of the hands and facial muscles appeared. She became duller, attention was gained with more difficulty, she had little conception of the passage of time; and was disoriented for place and person, insight became lost.

Urine examination showed a trace of albumen, with a specific gravity of 1,026, high colored, and microscopically granular and hyalin casts were found.

From this time she appeared to grow rapidly worse, in many respects the picture suggested a terminal uremia, unfortunately the blood urea was not computed.

Sixteen days after admission the blood picture continued essentially the same. Physical examination showed an emaciated individual whose skin was pale yellow in color, stupor so pronounced that she could not be roused, facial muscles twitching, tongue thickened and excoriated. Eyes half opened, right pupil larger than left, both were regular in outline and reacted readily to light, a gross inconstant nystagmus persisted.

The respiratory tract was negative to examination except for slight redness of the post-pharyngeal space.

The heart showed the right border 2 centimeters and the left border 10 centimeters from midsternal line. Pulmonic second was accentuated. Pulse was of poor tension; rate, 104. Cranial nerves negative. All normal reflexes were present and equal and no abnormal reflexes were elicited. The last thirty-six hours that she lived numerous involuntary water stools were passed.

At post mortem some edema of the lungs was found. The heart showed large chicken-fat clots. Valve measurements were within the normal limits, the cusps of the mitral and aortic showed slight thickening and the aorta showed a slight patching of atheroma, heart muscle was pale in color and soft.

Liver was firm, pale, and showed some fatty degeneration, grossly.

Spleen reddish brown, mottled with green, was firm and congested, showing numerous malpighian bodies on the cut surface. Adrenals were not remarkable. Kidneys were small, pale and the capsule was adherent, peeling with some difficulty, grossly a picture of chronic interstitial nephritis. The gastrointestinal tract showed evidence of acute enteritis which persisted for thirty-six hours prior to death, with hemorrhage in the folds of the jejunum and ileum.

Uterus not enlarged, firm, regular in outline, surface of uterine cavity pale and bathed in a sanguino-mucous fluid, discharged grossly. No evidence of new growth. Cervix, which was large and baggy, showed some excoriation and one small ulceration.

Spinal cord normal in appearance on section. Brain was firm, the first nerve bulbs and tracts were slender, otherwise not remarkable. Dura was free, not thickened, and pia was also negative.

To summarize: A woman about thirty-eight years of age, who five years before admission suffered from miscarriage followed by a continuous sero-sanguinous discharge, despite surgical measures during the entire period of five years, gave a history of gradual loss of strength for three years. For one year prior to commitment unable to care for herself and cared for in a wheel chair until seven weeks before admission, when it was necessary for her to remain in bed continuously. The picture which she presented on admission was that of extreme physical weakness and lassitude, with profound anæmia and picture of nephritis of chronic type in the urinary findings. At no time did her mental condition suggest a psychosis. Although as her condition grew progressively worse her picture resembled to some degree that of uremia with twitchings of the facial muscle, tremor of hands and arms, with dulled attention, disorientation and loss of definite grasp, but at all times unassociated with hallucinations or delusions and with no evidence of a deterioration process.

The blood picture presented corresponds for the most part with that of secondary anæmia. The most striking feature of the post mortem was the nephritic involvement of the kidneys and which no doubt was the primary cause of death.

CASE III. — The patient, a male, fifty-six. Occupation: formerly employed in paper mill. History of developmental period not noteworthy, received high school education. For a number of months prior to admission he had been troubled with shortness of breath, finally necessitating his admission to a general hospital. He reports that for the past four weeks he has received daily three-fourths of a grain of morphine sulphate to relieve his respiratory discomfort.

After a residence of three days at the general hospital it was reported he assaulted his roommate during the night; it was impossible to corroborate this assertion and he was committed to the hospital as insane.

In the admission office he was weak and breathless, unable to walk because of weakness and dyspnœa, and was carried to bed.

On examination sensorium was unclouded, production was coherent and relevant, grasp was good, he was correctly oriented. No evidence of deterioration processes were demonstrated, memory was apparently unimpaired and no delusions or hallucinations were elicited.

Physical examination showed an emaciated, anæmic individual suffering from profound dyspnœa. Heart showed apparent hypertrophy both to right and left, marked arrhythmia, auscultation revealed a loud, blowing,

systolic murmur over the entire precordia, the point of maximum intensity occurred over the areas of the aortic and mitral valves. Pulse rate, 120, of poor quality. Superficial vessels sclerosed; temporal vessels, tortuous; vessels of neck pulsated visibly. Systolic blood pressure, 170; diastolic, 150. Lungs showed evidence of edema due to poor cardiac compensation, and there was a marked edema of lower extremities extending to the thighs. Digestive and abdominal organs essentially negative. Cranial nerves negative, all normal reflexes present and equal, no abnormal reflexes elicited. Motor co-ordination as far as physical strength would allow was good. Nine days after admission he died, having shown no essential change in his mental picture. Two days and a half before death he showed a slight elevation in temperature; the highest registered 100.2° , conversant with the lung changes.

Urine showed specific gravity of 1,014. A trace of albumen. No sugar, and numerous casts, especially of hyaline and granular type, microscopically.

Post-mortem findings revealed a much hypertrophied heart, weight, 685 grams; marked coronary sclerosis. Valve measurements were as follows: tricuspid, 12 centimeters; mitral, 11 centimeters; pulmonary, 8 centimeters; aortic, 7 centimeters.

The myocardium was friable and a puriform thrombus was found at apex of the left ventricle, general graying of endocardium evident.

The lower half of right lung showed an area of infarction.

The right kidney weight 210 grams, bluish gray in color and firm; left, 60 grams. The kidney consisted of a dilated pelvis and multilocular cystic spaces with no appreciable kidney substance. Liver weight, 1,545 grams. Parenchyma was homogeneous, slight tissue increase. Brain weight, 1,465. Optic nerves somewhat edematous, as were the third nerves; the fourth nerves were found imbedded in adhesions. Vertebrae were unequal; spots of sclerosis in the basilar observed. Dura mater not markedly thickened. Pia slightly thickened in sulci. Spinal cord negative.

To summarize: The patient, a male, fifty-six years of age, who has suffered from shortness of breath and increasing weakness for a number of months prior to admission. In a general hospital it was reported that he assaulted his roommate. On admission at time of commitment he was dyspnoeic and weak, sensorium unclouded, production was coherent, and relevant, grasp and orientation good, memory apparently intact, and no delusions or hallucinations elicited.

Physical examination showed evidence of serious cardiorenal syndrome with poor compensation, with edema of the lungs and general anasarca. During the residence of nine days no evidence indicative of mental disturbance was observed.

It seems justifiable, even in the study of this small group of cases, to conclude —

1. That each case that is admitted to the hospital should be studied from every possible angle, physical, mental, psychological and laboratory, in order that the ultimate classification be the correct one.

2. That the opportunity for observation of suspected borderline individuals be taken more often by means of the temporary-care legislation.

3. That a broader conception of mental disease be supplied to the general practitioner in his medical training in order that his co-operation with the hospital physicians be a closer one.

NEUROPSYCHIATRY IN ARMY CAMPS.*

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At the beginning of the war there were said to be only two or three regular army officers who had given any special attention to neuropsychiatry. The broad application of this specialty in the examination and care of soldiers was a comparatively new idea, its introduction being looked upon as an experiment. To have persuaded the powers-that-be that neuropsychiatry should have an important place in the medical system of the army, was in itself no slight achievement. To have placed over seven hundred especially trained men in the service and under the care of our section is deserving of great commendation, and, apparently, has proved of great value.

Whatever may have been its shortcomings, psychiatry, in the examination of soldiers, "made good" to so pronounced a degree as to warrant this branch of medicine a permanent position in the army medical equipment. At first inclined to scoff, the line officer soon became convinced that in the solution of many of his soldier-problems his best friend and adviser was the psychiatrist. By the time the writer entered service a year ago, the high officials of the camps had apparently been won over to sensible procedures in the examination of those cases properly handled by our department.

Early drafts and volunteer enlistments which could not obtain satisfactory examinations supplied a large proportion of mental breakdowns and "misfits" constantly requiring attention until finally discharged. The number, for instance, of the mentally deficient which early went overseas loomed so large as the weeding-out process went on that the commanding officer of the American Expeditionary Forces cabled an order calling for more care in the selection of men and particularly for the rejection of such cases. At the commencement of activities, pressed along by the fear of shortage in man-power, many thousands of men were assigned to service which they were unable to perform, so that

* Read at the annual meeting of the American Medico-Psychological Association at Philadelphia, June 8, 1919, and originally published in the "American Journal of Insanity."

development battalions became cluttered with much material which later had to be discharged as unfit.

The belief that any man who had been able to perform a certain class of work in civil life could therefore render equivalent service in the army was shown to be based upon a misconception. Many men had done fairly well in the community only because they had not been called upon to adjust themselves to an unusually rigid environment with the forced restrictions such as obtain in the service. Under these latter conditions such men became mentally demoralized, upset the organization morale and caused worry and expense; beside often being under guard and before courts-martial when, in reason, they should have been quickly and permanently eliminated from the army.

To those who had the fortunate experience of serving in the camps, there will be little that is new in this paper. It is written, however, with the expectation that those whose other duties kept them out of the service will be interested in a sketch of the practical work of psychiatrists in some of the cantonments. At the various cantonments, psychiatrists were to be found on duty in the camp proper and also at the base hospitals. Placed under one head, it was made possible to co-ordinate the performances of these two sets of workers and thereby to eliminate, via camp, a large number of cases who would, ordinarily and unnecessarily, have been sent to the hospitals for disposition. The grand old game of "passing the buck" was in full sway in the camps, so that, at one time, the hospitals were receiving nervous and mental cases who should not have been admitted, as they could have been disposed of in short order by the machinery for discharge already existing in the camp.

As a bit of administrative detail, we had it so arranged that, with the exception of a violent case or in a similar emergency, no soldier was sent to the hospital unless previously he had been examined by a camp psychiatrist and recommended for such admission.

The importance of our work may be emphasized by submitting a few figures. During the months of May to September, 1918, inclusive, 54,000 recruits were examined at Camp Upton, N. Y. Of this number, 1,050, or 2 per cent, were rejected for nervous and mental disorders. At Camp Gordon, in four months, July to October, inclusive, 58,850 men gave a rejection of 1,225, or 2.8 per cent, for similar diseases and conditions.

THE CONSCIENTIOUS OBJECTOR.

The conscientious objectors had loomed large as the worst problem in camp when the writer first assumed charge of the neuropsychiatric work of the cantonment at Upton. Approximately nine hundred such men had been collected under special guard and segregated while awaiting the final disposition of their cases. A bad half-hour was spent in an interview with the commanding general, who demanded the proper solution, from our standpoint, of this problem, which was rapidly assuming alarming proportions.

Unlike the Quakers or the Mennonites, both of whom agreed to domestic service, the objectors at Camp Upton, who were largely of European birth, refused not only to do full military duty, but in many cases would not put on a uniform, do a stroke of work, or even sign the pay roll. Such men had exasperated the authorities and in time a number of the worst cases (that is, those with whom nothing could be done by persuasion) were sent to the Psychiatric Board for examination and report.

We were then confronted with the question as to the proper course to pursue. It had frequently happened that these flagrant cases had been excused from responsibility by a previous board on the basis of constitutional psychopathy, which, in turn, accounted for the unflattering opinion of psychiatrists held by the commanding general. There can be no doubt but that such cases were deviates from normal, even psychopathic. These were men whose earning capacity and social status had never been even average. Many admitted belief in work simply because they were forced to earn an existence for themselves. Many appeared to be scholarly or, rather, to be great readers, especially of socialistic literature. Numbers of them appeared, moreover, to be strict vegetarians and expressed their repugnance to shedding of blood, even that of animals for food. No doubt they were "queer."

However, we had to report on their mental capacity and responsibility at a time when our country was facing the tremendous emergency of war. Such men, if released, would have become the rankest sort of propagandists. No civil institutions would have held them if they could have been committed, which seems unlikely. These objectors certainly knew it was wrong to commit murder, arson, or other crimes against law. Surely they knew it was wrong to break the laws of the country, and knowing such they could be held accountable for their misconduct.

Our final solution of this problem was this: The objector was classed as a constitutional psychopath only if facts warranted such a diagnosis, but he was held in the opinion of the Board "to have sufficient mental capacity to justify his being brought to trial" for refusal to obey military law. His conviction meant from ten to thirty years at Leavenworth which provided the only institution which could keep him from becoming a public menace. Such summary action by the courts did much to effectively change the attitude of the conscientious objectors as a class, especially after thirty of them were sent to Fort Leavenworth. Personally, from observation of their attitude toward confinement at the base hospital, I believe these men found in hospital or prison care enjoy better existences than many of them had ever known before.

THE DRUG ADDICT.

At Camp Upton drug addicts constituted 17 per cent of the rejections for mental disease, while at Camp Gordon they made up 3.27 per cent of such rejections. Many of these unfortunates pleaded to be accepted as they professed a desire to be cured of their habit and they thought the army life could bring this about. However, this scheme did not work, and it soon became evident that cures were, as a rule, out of the question; and, again, that all such men lowered the morale of organizations. Much evidence was obtained to prove the existence of an extensive business in the sale of drugs, not only to old habitués, but with the intent to increase the number of drug users.

After a fair trial of the idea that drug addicts could be made serviceable (which failed, by the way) all such addicts were rejected in all proved cases, as they were shown to be poor material for army purposes. There may have been a few cases of recently acquired habit who recovered completely, but they were the exceptions. No recruit was discharged on his own say-so, but in positive cases corroborative evidence was not hard to obtain. Apparently the number of fake addicts was not large, very few trying to evade service by this device, although quite a number had not been at the habit long and were readily weaned from the drug. These last were not established cases and had none of the appearances of the old-timer.

A survey of 100 drug addicts gave them a mental age rating of twelve years, which is not materially different from that of other soldiers of the same educational-industrial level. As a rule, they were, however, unskilled or poorly trained workers whose school-

ing, in 50 per cent of the men, did not extend above the fifth grade. Only 10 per cent were foreign born and the hundred was equally divided between two army drafts, one white, the other black. In both classes, the drug addict from a rural community seems to be a rare specimen.

Out of 100 cases surveyed, 56 had been committed to penal institutions on charges other than drug addiction. Seventy-two men reported one hundred and seventy-three unsuccessful attempts at a cure. Although not measurably deficient, these men were certainly inferior in fields other than intellectual.

THE EPILEPTICS.

One would have supposed that such cases as epileptics would have been well weeded out by various draft boards with less difficulty than obtained in many other classes of registrants. However this may appear, large numbers of epileptics entered camps, later to be discharged when their disabilities came to our attention. Many men came to camp in the drafts with definite histories of seizures, showing scars on bodies and tongues, while some showed quite marked deterioration. Such were rejected, even on suspicion, some may say, but such a course seemed the common sense one. There was, of course, no defence against the epileptic who willfully deceived and who showed no evidence of his infirmity. One simply had to wait for his attacks, and fortunately they generally appeared quickly under the ardors of drill. Probably about 3.5 per cent of 1,050 rejections were because of this disease.

While possibly foreign to this paper, it is interesting to note that at Plattsburg men sent home from overseas as epileptics fell into one of three groups: the true epileptic; the hysteric; and the soldier who had "spells," "fainting spells," which appear to have been caused possibly by some endocrine disturbance.

MENTAL DEFICIENCY.

Thirty per cent of our rejections for nervous and mental disabilities was for mental deficiency, about .6 per cent of all cases examined. Such men offered a serious problem, as we had to overcome the disinclination of others to allow rejection of a man who looked healthy and strong. Orders from Washington instructed examiners to consider no man unfit for military service who should grade up to or over ten years, mental rating. One

must also grade eight years or lower before he was to be considered unfit thereby for domestic duty.

It is my belief that no other class of men made for so much mischief in the army as did the feeble-minded, and, as has been said before, the stories of such soldiers as came to our especial attention proved the statement that ability to get along in civil life did not, of itself, insure satisfactory army service. Such an idea was not workable, and a large number of cases we had to examine were of just such soldiers who could not get along in a strange and exacting environment.

Psychological group examinations rendered an important service in calling to our attention men who graded low, and that earlier than without such ratings. All such were referred to the psychiatrist from the psychological boards, and in many cases were accompanied by a recommendation for rejection. More careful consideration of these men would find some fit for domestic duty, but, on the whole, the low raters did not prove "worth their salt."

The defects in fields other than intellectual were generally brought to notice when the higher grades of morons, for instance, failed to fit properly into their several assignments or organizations. Much that was reckoned as criminality or insubordination can be charged to the mental deficiency of these soldiers.

THE PSYCHOTIC CASES.

In the case of the psychoses, we were limited in the camps of my acquaintance to relatively few varieties. Manic-depressive psychoses were present in very small numbers, especially while the drafts were coming in. From our experience at United States General Hospital No. 34, it is to be inferred that such manic-depressive cases developed in considerable numbers after November 11. Most of the insane in the camps fell into the schizophrenic group and were generally called *dementia præcox*. In practically all of such soldiers it was possible to obtain outside histories which, together with the patients' stories, appeared to indicate that the acute psychotic episodes were but other stages in conditions which had existed for some time, even if below the surface. After worry at home over the draft-to-come, many men seemed to just go to pieces once they reached camp.

The alcoholic psychoses, as one would expect, in a draft of men between twenty-one and thirty-one, were not numerous. There were a few cases of chronic alcoholism, but astonishingly

few. Acute alcoholic hallucinosis was found in but few men also. Outside of numerous men who had endeavored to accommodate themselves to too many farewell parties and who came to camp intoxicated and shaky, alcohol did not cause much concern in the examination of recruits.

Neurosyphilis contributed many cases for rejection, taken in the aggregate. In one draft of 800, luetic cases amounted to .7 per cent of men examined. As might be expected, cities seemed to furnish a much larger per cent of luetic disabilities than did the country. Men so infected appear to have broken down very suddenly overseas, so that at No. 34 we have seen numerous cases who presented an extremely rapid onset and course, returning to this country with well-marked paresis.

Experience in camps terminated a bit too early to speak of the toxic-infectious psychoses, of which we saw little. It appears from observation of cases at Plattsburg and at Norfolk, that following measles, influenza, and other acute diseases there developed frequent acute psychoses, most of which seem to have been only temporary.

CONSTITUTIONAL PSYCHOPATHIC STATES.

Under this heading one may speak of a large group of men, many of whom were accepted for service only to become very unhappy and a source of great concern to every one interested. At Camp Upton 50 were discharged during five months, while at Camp Gordon 299 were thrown out in four months. Emotional instability, inadequate personality, and sexual psychopathy provided the subdivisions under which the majority of psychopaths were classified. These three classes just mentioned were found to consist of poor material to begin with and the demands of war did not help them in their adjustments. It is my belief that we should have been even less conservative in the rejection or discharge of persons so unequal to the demands of the army as were this class.

THE PSYCHONEUROSES.

One can hardly describe the amazing story of this class of recruits and other men who had entered the service only to fall by the wayside when active duty was undertaken. It is difficult to believe the frequency with which men were turned down for inability to drill or to march. Enuresis, hysteria, neurasthenia, and stammering furnished a large quota of rejects and discharges.

It was interesting to learn the frequency with which other forms of the psychoneuroses had previously been afflicted with enuresis. Needless to say such men were constantly referred to us for disposition.

PRISONERS.

My first experience with a court-martial convinced me that many prisoners, should they be examined, would in all probability be found to be mentally irresponsible, as was the case herewith described. X. Y. Z., a southern negro, was referred to the Psychiatric Board with his history: He was under arrest and awaiting trial for the murder of a white man and woman, the crime being committed while the soldier was on guard duty. His passions having been aroused by his discovery of a little "party" in the woods on his post, he shot the man; and when, resisting his advances, the woman tried to get away, he killed her also.

The crime was soon discovered and after an investigation this negro was placed under arrest and for some reason was taken to New York City for arraignment. At this hearing he confessed the deed and signed a written statement of confession. Returned to the camp, he was put in confinement and our Board was asked to examine him. The first step in our procedure was to have a mental rating, and one of our own men did the necessary testing, giving the negro a mental age of 8.0 years. In order to be officially precise one of the Psychological Board was also asked to examine him, which was done within two days. At this time a rating of 7.8 years was returned, the prisoner being unable to profit by the previous test.

Upon talking with the prisoner we found him to be illiterate, dull, and entirely devoid of any appreciation of his plight. He denied the truth of his confession, although it was in detail and could not have been made up by one unacquainted with the intimate facts of the case. This confession was made, he persisted, so that "he might be allowed to leave jail and rejoin his company." His description of the crime, however, was too accurate to have been given by any other than a principal or near witness. After considering all the facts of the case, we unanimously reported this soldier as "not possessed of sufficient mental capacity to justify his being brought to trial."

The court was convened: all members of our Board were called upon to testify and the majesty of military law was impressed upon us. The average line officer appears to think that a crime

having been committed, some one must necessarily be punished, really an "eye for an eye" sort of prejudice. As long as this negro could tell the court he knew it was wrong to commit murder, in their opinion he must be a responsible party. In spite of our testimony he was found guilty of murder and sentenced to be hanged. The finding of the court and this sentence was approved by the commanding general of the camp. The reviewing authority at Washington, however, set aside the verdict and ordered the man sent to an insane hospital for life, as a dangerous person and irresponsible. The attitude of this court toward the Board was much more sympathetic after this conclusion of the affair became known.

Another instance occurred at Camp McClellan, when three men were arrested for impersonating officers and for other irregularities. It seems two prisoners in the guardhouse were released by a mess-sergeant, the three then proceeding to be real "wild men." Stealing officers' uniforms and money, they took a jitney away from its driver and started on a career of crime across two States, only to be arrested and brought back.

The leader and brains of the trio was a pronounced constitutional criminal, with a bad record of robbery, forgery, and implication in a murder. The others were both mentally deficient, grading less than nine years, and their histories were full of asocial acts. One feeble-minded soldier had been in the service over five years and admitted that in all that time he had not, in the aggregate, been out of the guardhouse more than six months. Yet he had been a source of expense and worry all that time, when he should have been discharged long before.

My early observation of prisoners so impressed me that by arrangement with the camp psychologist every prisoner was given a psychological test as soon as possible after arrest. With the Judge Advocate we had an agreement by which each prisoner found to be defective mentally was reported as such, freed from charges, and discharged from service without further delay. In this way we were able to select and discharge such cases early, with all its entailed saving, whereas before we had not passed upon many cases unless deficiency had been suspected by the officers handling them.

Finally, the service at the base hospitals deserves some comment. Here psychotic cases, prisoners, and suspected malingerers, drug addicts, as well as organic diseases, were studied and disposed of according to necessity. Many soldiers were seen in

consultation with members of other services and a surprisingly large number of psychiatric cases were culled from medical wards. This was particularly true of the mentally deficient.

As time went by the wards of the hospitals became filled with soldiers who could not be considered "not in line of duty" cases and who had to be cared for. Now the Bureau of War Risk Insurance is relieving the army of such responsibilities in cases which have been in hospital in this country for four months.

It is to be expected that the necessity for neuropsychiatry has been sufficiently established during these last two years to insure the more careful selection of men for the service at all times. Certain it is that our recent experiences have opened new lines of psychiatric investigation and endeavor as well as emphasized the great need of more careful and thorough handling of similar problems in civil life.

A STUDY OF THE KIDNEY FUNCTION IN SENILITY.

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To quote a recent publication, "death follows on account of the insufficiency of the excretory process, therefore the limit of life is a matter of excretion," is to express a rather general notion which medical men have come to have. Old age is considered by many to be a chronic, incurable disease, associated in large part with, or caused by, a diminution of kidney function.

This study is an inquiry into the functional conditions of the kidneys in late life, designed in part as an assistance in the interpretation of post-mortem findings in cases coming to such a study. A group of 41 patients was studied, in which group the ages ranged from seventy to eighty-eight years. None of the patients had shown any fever, dyspnoea, edema or other signs within a period which could in any way be considered as influencing the findings in this study. The hemoglobin of all the patients ranged between 75 per cent and 100 per cent. The blood cytology was essentially normal. A great majority of the patients studied were active, not only working about the wards, but most of them have been engaged in manual labor or in the industrial rooms. On the whole, the co-operation of the patients was good indeed, despite the fact that every one was psychotic. It is true, however, that the more complicated tests, such as the two-hour test, could not be carried out.

The features that were studied in this group were the blood urea, expressed as blood urea nitrogen, blood pressure, phenolsulphonaphthalin test for renal function and the urinalysis. The blood urea nitrogen was determined by the Marshall urease method. The soy beans were ground, dried, powdered and sieved, giving a stable, easily handled enzyme. The aëration and titration method was used in determining the amount of urea nitrogen in the sample of blood used (5 cubic centimeters). In every case the blood was drawn in the morning before breakfast, twelve to fourteen hours after the preceding meal. This plan of obtaining the blood so long after the preceding meal fails, of course, in securing evidence of slight retardation in the excretion of urea, as might well be expected, in these cases. But the plan does give values which are independent of the food intake and gives an

idea of the constant level of blood urea characteristic of the individual. Blood taken on different days, and at considerable intervals on the same patient, has shown very close approximations of the urea nitrogen on these different occasions, as the appended tables show. The blood pressure readings were taken in the mid-afternoon by means of a mercury manometer. The values given are either the average of several readings, where the readings were fairly uniform, or several readings taken on different occasions, where the different readings have not been so close. The phenolsulphonaphthalin test of Rountree and Geraghty was used in the usual manner. It is worthy of note that the standard solutions used in this test should be made up frequently, as they fade even when carefully sealed. This applies in my experience only to the standards made up in the laboratory, not to the sealed standards of purchased calorimeters. The urinary examination was done in a routine manner; no special attempt was made to find casts, for instance. The two-hour test meal studies could not be carried out on these cases, nor could an investigation of the quantity of the day and night urine be conveniently made. However, it is a distinct impression, judging from the few cases in which the latter was studied, that there is in most cases an increase in the night volume. Tests, such as the elimination of lactose, potassium iodide, methylene blue, indigo-carmin, etc., were not applied, nor was the action of diuretics investigated.

DISCUSSION OF THE RESULTS.

Using the blood urea nitrogen as a criterion, there was found evidence in this group of a mild degree of retention in a number of cases, — about 50 per cent. Just what value of blood urea nitrogen is to be considered normal influences, of course, one's opinion whether there is or is not retention in a given case. In all the cases I have studied, the preceding meal can have little to do with the figure. During the course of over 100 blood urea determinations in other connections on younger individuals who were on the same hospital diet and routine, the blood being taken, as in this study, before breakfast, I found no value over 16 milligrams (in cases free from demonstrable kidney insufficiency) and only 3 over 15 milligrams per 100 cubic centimeters of blood. Two of these cases showing a value over 15 milligrams were on cases whose blood urea nitrogen had been done at least fifteen times, so I have come to consider that under the conditions of diet, etc., here, the upper value for normal blood urea nitrogen is about 15 milligrams. I realize this value is at variance with

figures given by others, but under the conditions here, it is seldom that a blood urea nitrogen value of over 15 milligrams is found. The usual values range from 9 to 14 milligrams per 100 cubic centimeters of blood.

Turning to the blood pressure readings: of the 40 cases in which both systolic and diastolic readings were taken there were 21 cases which showed a systolic pressure of 160 millimeters or over. There were 28 cases showing a diastolic reading of 85 millimeters or over and 23 cases with a diastolic reading of 90 millimeters or over. Of 19 cases showing a blood urea nitrogen of 16 milligrams per 100 cubic centimeters or over, 7 showed a systolic pressure of 160 millimeters or over, whereas in this same group of 19 patients, there were 15 who had a diastolic blood pressure of 85+ millimeters and 12 with a diastolic pressure of 90+ millimeters. If a diastolic reading of 85 to 90 millimeters is considered as much a relative elevation of diastolic pressure as 160 millimeters is an elevation of systolic pressure, then it is evident that a retention, judging from the blood urea nitrogen, is associated with an elevated diastolic pressure about twice as frequently as it is with an elevated systolic pressure. This is an observation made very frequently and one which has been given considerable emphasis. It is a correct observation, but in the cases studied here, including another larger series in which the elevated blood pressure was the criterion of selection, a low blood urea nitrogen is just as likely to be accompanied by a high diastolic blood pressure as is a high blood urea nitrogen. Nor can it be said that an elevated blood pressure — either systolic or diastolic — allows a prediction that the blood urea nitrogen is elevated, for only about 50 per cent of the cases with a high blood pressure show a high urea nitrogen (see tables).

| Number. | Age. | Blood Urea Nitrogen. | Blood Pressure. | URINE. | | | | | Renal Function (Per Cent). |
|---------|------|----------------------|------------------|-------------------|----------|--------|--------|------------------------|----------------------------|
| | | | | Specific Gravity. | Albumin. | Sugar. | Blood. | Sediment. | |
| 448 | 71 | 17.36 | 165-95
140-70 | 1010 | 0 | 0 | 0 | Rare hyal. cast. | 55 |
| 261 | 78 | 11.2
12.3 | 152-80
140-80 | 1014-22 | 0 | 0 | 0 | Hyal. and gran. casts. | 35 (1916)
uncoop. |
| 131 | 74 | 8.4
9.2 | 160-95
140-85 | 1012-18 | 0 | 0 | 0 | Rare hyal. cast. | 50 |

| Number. | Age. | Blood Urea Nitrogen. | Blood Pressure. | URINE. | | | | | Renal Function (Per Cent). |
|---------|------|----------------------|-----------------|-------------------|----------|--------|--------|-----------------------------|----------------------------|
| | | | | Specific Gravity. | Albumen. | Sugar. | Blood. | Sediment. | |
| 319 | 77 | 12.12 | 180-90 | 1024 | 0 | 0 | 0 | Few cylindroids — no casts. | 45 |
| | | 11.76 | 150-85 | | | | | | |
| 337 | 72 | 20.2 | 130-70 | 1020 | sl. tr. | 0 | 0 | Gran. casts. | 15 |
| | | 18.2 | | | | | | | |
| 26 | 71 | 16.2 | 140-90 | 1010 | s. p. t. | 0 | 0 | Occ. hyal. cast. | 40 |
| 467 | 79 | 18.5 | 128-80 | 1025 | 0 | 0 | 0 | Few gran. casts. | 40 |
| 427 | 79 | 10.1 | 120-84 | 1025 | sl. tr. | 0 | 0 | Few gran. casts. | incont. |
| | | 11.2 | | | | | | | |
| | | 15.1 | | | | | | | |
| 446 | 87 | 23.3 | 120-60 | 1024 | 0 | 0 | 0 | Pus, no casts. | 15 |
| | | 29.9 | | | | | | | |
| 472 | 74 | 14.0 | 180-100 | 1020 | 0 | 0 | 0 | Occ. hyal. cast. | 35 |
| | | 13.7 | 150-95 | | | | | | 35 (1916) |
| | | 14.6 | | | | | | | |
| 107 | 77 | 17.9 | 160-80 | 1013-22 | 0 | 0 | 0 | Rare hyal. cast. | 55 |
| | | 15.7 | 168-95 | | | | | | 70 (1916) |
| 519 | 75 | 15.4 | 200-110 | 1004-28 | 0 | 0 | 0 | Occ. hyal. cast. | 60 |
| | | 13.2 | 150-110 | | | | | | |
| 466 | 76 | 11.2 | 106-52 | 1020-30 | 0 | 0 | 0 | Gran. and hyal. casts. | 60 |
| | | 15.9 | | | | | | | |
| 715* | 73 | 7.3 | 160 | 1020 | trace | 0 | 0 | Hyal. and gran. casts. | - |
| 313 | 73 | 10.6 | 185-105 | 1022 | 0 | 0 | 0 | Rare hyal. cast. | 35 |
| | | 13.4 | 190-120 | | | | | | |
| 67 | 73 | ref. | 210-120 | 1016-30 | 0 | 0 | 0 | Few hyal. and gran. casts. | uncoop. |
| 235 | 73 | 13.4 | 190-95 | 1010-14 | 0 | 0 | 0 | No casts. | 55 |
| | | 15.1 | 180-90 | | | | | | |
| | | 9.24 | | | | | | | |
| 110 | 71 | 12.9 | 200-120 | 1020 | 0 | 0 | 0 | Few hyal. and gran. casts. | 45 |
| | | 11.8 | | | | | | | |
| | | 13.4 | | | | | | | |
| 106* | 83 | 20.2 | 215-100 | 1020-24 | 0 | 0 | 0 | Occ. hyal. casts. | 25 |
| 136* | 70 | 34.8 | 270-160 | 1010-22 | 0 | 0 | 0 | Many gran. and hyal. casts. | 45 (1916) |
| 143 | 75 | 12.3 | 180-100 | 1011-20 | 0 | 0 | 0 | Rare hyal. cast. | disch. |
| 509 | 87 | 8.7 | 240-90 | 1016-18 | 0 | 0 | 0 | Few gran. casts. | 65 |
| | | | 180-95 | | | | | | |

* Died; autopsies have been done on Nos. 715, 106, 136, 469 and 277.

| Number. | Age. | Blood Urea Nitrogen. | Blood Pressure. | URINE. | | | | | Renal Function (Per Cent). |
|---------|------|----------------------|-----------------|-------------------|----------|--------|--------|-------------------------------|----------------------------|
| | | | | Specific Gravity. | Albumin. | Sugar. | Blood. | Sediment. | |
| 432 | 70 | 21.8 | 230-100 | 1018 | 0 | 0 | 0 | No casts. | disch. |
| | | 16.9 | | | | | | | |
| 240 | 88 | 16.8 | 200-140 | 1008-22 | 0 | 0 | 0 | Occ. gran. and hyal. casts. | uncoop. |
| | | 16.8 | 180-115 | | | | | | |
| 341 | 73 | uncoop. | 130-90 | 1014 | s. p. t. | 0 | 0 | Occ. hyal. cast. | uncoop. |
| 437 | 78 | 14.0 | 145-82 | 1022 | trace | 0 | 0 | Numer. hyal. and gran. casts. | 30 |
| 407 | 71 | 21.8 | 118-80 | 1020 | 0 | 0 | 0 | Many hyal. and gran. casts. | 60 |
| | | 19.0 | 130-90 | | | | | | |
| | | 17.4 | | | | | | | |
| 242 | 70 | 16.5 | 150-90 | 1006-12 | 0 | 0 | 0 | Gran. casts. | 30 |
| | | | 170-115 | | | | | | |
| 859* | 86 | - | 180-78 | 1020 | sl. tr. | 0 | 0 | No casts. | - |
| 408 | 76 | 11.7 | 165-75 | 1004-20 | 0 | 0 | 0 | Hyal. and gran. casts. | 35 |
| 284 | 74 | 20.7 | 160-100 | 1005-30 | 0 | 0 | 0 | Gran. casts. | 55 |
| | | | 130-75 | | | | | | |
| 40 | 73 | 15.4 | 130-70 | 1022 | s. p. t. | 0 | 0 | No casts. | uncoop. |
| | | 15.96 | | | | | | | |
| 776 | 71 | 23.0 | 150-95 | 1012-20 | 0 | 0 | 0 | Few gran. casts. | 30 |
| | | 23.5 | | | | | | | |
| 41 | 77 | 16.24 | 180-100 | 1014 | 0 | 0 | 0 | Rare hyal. cast. | uncoop. |
| | | | 150-70 | | | | | | |
| 334 | 70 | 22.4 | 166-88 | 1012-24 | s. p. t. | 0 | 0 | Hyal. and gran. casts. | 60 |
| | | 15.4 | 135-75 | | | | | | |
| 404 | 70 | 16.0 | 140-100 | 1016 | 0 | 0 | 0 | Rare hyal. casts. | 50 |
| | | 15.4 | 160-90 | | | | | | |
| 469* | 82 | - | 140-75 | 1020-25 | 0 | 0 | 0 | No casts. | - |
| 764 | 81 | 15.1 | 190-90 | 1018-20 | sl. tr. | 0 | 0 | Occ. hyal. cast and pus. | uncoop. |
| | | 15.4 | 240-130 | | | | | | |
| | | 20.3 | | | | | | | |
| 277* | 70 | 16.3 | 180-120 | 1015-21 | 0 | 0 | 0 | Hyal. and gran. casts. | - |
| | | | 200-90 | | | | | | |
| 853 | 76 | 17.6 | 170-80 | 1035-18 | 0 | 0 | 0 | Few gran. casts. | 40 |
| | | 17.6 | | | | | | | |
| 278 | 70 | 12.8 | 195-100 | 1012-22 | 0 | 0 | 0 | Few hyal. casts. | 40 |
| | | | 170-85 | | | | | | |

* Died; autopsies have been done on Nos. 715, 106, 136, 469 and 277.

When the renal function is considered (*i.e.*, the phenolsulphonaphthalin output), there appears to be little, if any, relation between the rate of elimination of the dye and the value of the blood pressure. Fourteen of the 19 cases showing a high blood urea nitrogen have an average rate of elimination within 5 per cent of those cases showing a more normal value of blood urea nitrogen. When the renal function test values are examined, it is evident, especially with the lower percentages of excretion, that the low rates of excretion of the dye are associated for the most part with a high urea nitrogen. When, however, there is a poor elimination of phenolsulphonaphthalin, associated with a normal blood urea nitrogen, there is usually a high diastolic blood pressure. Here, again, one looks upon an elevated diastolic blood pressure as significant, but an examination of the diastolic blood pressure in cases with a good elimination of the dye shows that many of these cases, too, have a high diastolic reading.

On urinary examination there was found albumen in 10 cases (25 per cent). This finding had little relationship to the other determinations. Casts were readily found in routine examination in a majority of the cases (a frequent observation but pointing, of course, to damaged kidneys). None of the cases showed glycosuria, although several of the cases did show a moderate hyperglycemia (not reported upon). There was little inability of the kidneys to pass a urine of reasonably high specific gravity on demand.

Five of the 6 cases of this series have been autopsied, several dying too early in the study for complete figures to be obtained. These 5 cases have shown, as usual, extensive arteriosclerosis and fibrosis of the liver, heart, spleen and other organs and gross evidences of chronic interstitial nephritis. Two of the cases showed very extensive destruction of the renal architecture. Since the permission for post-mortem study can be obtained in the majority of the cases dying in the hospital, it is hoped that this ante-mortem inquiry may be of some assistance in later studies.

SUMMARY.

The present study was made on a group of 41 patients, whose ages ranged from seventy to eighty-eight years. These patients were free from gross evidences of renal insufficiency or other compromising conditions (fever, edema, dyspnoea, anæmia of note, etc.) and most of them were active workers.

Under the conditions of diet and hospital routine here, the upper normal value of blood urea nitrogen is considered as 15 to 16 milligrams per 100 cubic centimeters, the blood being drawn before breakfast, twelve to fourteen hours after the preceding meal.

Fifty per cent of the cases studied showed a moderate degree of retention, using the blood urea nitrogen figures as a criterion.

Fifty per cent of the cases showed a systolic blood pressure of 160 millimeters or over; a higher percentage showed a diastolic pressure of 85 to 90 millimeters or over. The blood pressure readings cannot be said to be related to either the blood urea nitrogen or to the rate of elimination of phenolsulphonaphthalin.

In 27 cases in which the elimination of phenolsulphonaphthalin was determined, 13 showed a value of 40 per cent or lower; 9 of these were 35 per cent or lower. A low value of elimination of the dye is associated for the most part with an elevated blood urea nitrogen. A good excretion is related for the most part with a relatively low blood urea nitrogen.

Twenty-five per cent of the cases showed albumen in the urine. There were no cases of glycosuria or hematuria. Practically all of the cases showed casts, — a customary observation.

Sixty-six per cent of the cases showed either an elevated blood urea nitrogen or a depressed value of phenolsulphonaphthalin elimination (40 per cent or lower). If one disregards the findings of only a few casts in the urine and disregards the blood pressure also, it can be said that, in the group of patients studied, about 70 to 75 per cent show easily demonstrable evidences of kidney insufficiency.

It will be noted that in this group there are several cases showing a relatively low blood urea nitrogen and a good renal function, but which have a considerable elevation of blood pressure, the so-called cases of "essential" hypertension.

A NOTE ON EXPERIMENTAL SCURVY IN THE GUINEA PIG.

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Much research has been done during the last few years upon the so-called deficiency diseases, resulting in the development of several interesting and significant features. McCollum and Pitz¹ have reported comprehensive studies made upon experimental scurvy in the guinea pig, and have come to the conclusion that this disease is due to retention of feces in the cecum, which organ is unusually large and delicate in this species. The retention results from a diet which does not possess such physical properties as will lead to the formation of bulky, easily eliminable feces. The pasty feces resulting from such a diet are retained in the delicate cecum, putrefaction ensues with injury to the intestinal wall, absorption of toxins and bacteria may take place, resulting in the clinical features of scurvy.

The proof of this assumption is found when at post-mortem examination done on pigs dying from the disease, the cecum is found distended with putrefying feces, the upper intestinal tract and lower colon are usually empty. And, in addition, administration of laxatives to animals soon after the onset of symptoms of scurvy greatly benefits the animals, and administration throughout the experimental period either prevents or delays development of the disease.

The present note reports studies of a similar nature and embraces a further feature, as seen in the experiments done here. A number of pigs were kept on a diet of oats and milk, and the majority of them developed evidences of the disease in four to six weeks. At autopsy of animals dying of the scurvy so produced, the cecum of each animal was found distended with pale, pasty feces, and the extremities showed the usual signs of scurvy. Other animals were placed on a similar diet and after the development of the disease, were given liquid petrolatum or phenolphthalein, with undoubted improvement in the signs of scurvy. In no case, however, was it possible to restore normal health to the animals, though the small number of pigs so treated prevents

attaching any significance to the adverse results. And in all probability the administration was begun at too late a stage in the disease to reasonably expect recovery. That there was improvement, however, was evident.

Knowing that the disease may develop on a diet which one might expect would yield bulky feces (such as oats and dry cabbage), a larger group of animals was placed on a diet of oats and hay, and these animals developed scurvy in from four to six weeks, as expected. Autopsies done on animals dying from scurvy developed on this diet showed well-formed feces in the lower colon, and firm but not necessarily impacted feces in the cecum. The gums, extremities and condition of nutrition were, to all appearances, similar to the conditions found in animals autopsied after fatal results on the diet of oats and milk. The feces were dark colored, and the amount of putrefaction was much less than that found in animals which had been on the diet yielding feces of less bulk. The amount of distention was also much less; the appearance of the cecum, colon and ileum was not especially abnormal. The consistence of the stools altered but little during the period of observation. Administration of laxatives after the onset of signs of scurvy benefited these animals also.

It is not evident why, if scurvy in the guinea pig is due primarily to impaction of feces in the delicate cecum, the pigs on a diet of oats and hay should develop the disease, when the degree of impaction is at least much less than that seen in animals on a diet yielding pasty feces, and the character of the feces not especially abnormal. It is obvious that the poorly balanced diet leads to malnutrition, and it may be that absorption of toxins and bacteria from the intestinal tract may be attributed more directly to that factor, which probably involves the intestinal mucosa quite as much as other tissues. However, this note does not purport to be a discussion of the etiology of scurvy.

The presumption that a certain degree of the inspissation of the feces is due to a late or terminal feature of the disease seems to be borne out by the fact that the feces of animals killed before the very last stage of the disease are less abnormal than those found in animals at death. During the last stage of the disease, the animals are unable to move about and to secure water, and it is possible that a certain, though probably a small, degree of the fecal condition is due to this factor.

Blood cultures made on animals dying from or killed during

the study were uniformly sterile. The histo-bacteriological studies of the tissues have not been done as yet.

It is of interest to note that a group of rabbits placed on the same diet of oats and hay showed no symptoms, save a loss of flesh, after four and a half months. One side of their pen was the basement wall, which had been whitewashed and the rabbits had eaten off the whitewash as high as they could reach. The rabbits in four other pens similarly arranged, and which were on a general diet, did not do this. Whether the calcium in the whitewash had anything to do with the prevention of scurvy or malnutrition was not determined.

SUMMARY.

Scurvy can be produced in guinea pigs on a diet which yields bulky feces, such as oats and hay. Autopsies on animals dying as a result of the disease which has developed on this diet show the usual findings seen in this disease and, in addition, a condition of the intestinal tract not far removed from normal. This is in contrast to the findings of an empty lower colon, impacted cecum, and pasty, putrefying feces, as seen in scurvy produced by a diet of oats and milk, and which features have recently been emphasized by McCollum and Pitz in their discussion of "The Vitamine Hypothesis and Deficiency Diseases" as the essential causative factor in this disease.

Blood cultures of animals with scurvy yielded uniformly negative results.

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A SIMPLE APPLICATION OF THE VOLHARD PRINCIPLE FOR BLOOD PLASMA CHLORIDES.*

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In an attempt to secure a convenient, rapid and accurate method of determining the chloride content of blood plasma, the following application of the Volhard principle was found to be satisfactory. This principle is the precipitation of the chlorides by a standard solution of silver nitrate and the subsequent titration of the excess silver nitrate by potassium sulphocyanate, using iron-ammonium-alum as an indicator. The end-point is the first permanent reddish tinge due to the formation of ferricyanate when all the silver nitrate is combined with the titrating solution of potassium sulphocyanate. Knowing the amount of silver nitrate which has reacted with the halide present and the value of the silver nitrate solution in terms of sodium chloride, allows one to ascertain the amount of sodium chloride present in the original fluid examined.

In making determinations of substances in the blood, a method for such determination must be sufficiently accurate to allow the use of small samples. The objection to the usual Volhard procedures is that the solutions, especially the back-titrating solution, are too strong. Each unit of measurement is equivalent to so much sodium chloride that a variation in back titration of a single drop (.05 cubic centimeter) introduces a considerable error in the determination of the sodium chloride in a small sample, say 2 cubic centimeters.

The following solutions were made up: —

Solution I.

| | |
|---|---------|
| Silver nitrate (grams), | 7.2653 |
| Nitric acid (concentrated) (cubic centimeters), | 250.0 |
| Saturated solution of iron-ammonium-alum (cubic centimeters), | 50.0 |
| Distilled water to make (cubic centimeters), | 1,000.0 |

* Received for publication, July 17, 1918.

Solution II.

Potassium sulphocyanate in distilled water of such strength that 25 cubic centimeters is exactly equivalent to 5 cubic centimeters of the silver nitrate solution. Each cubic centimeter of the silver nitrate solution is equivalent to 2.5 milligrams of sodium chloride and each cubic centimeter of the potassium sulphocyanate solution is equivalent to .5 milligram of sodium chloride.

PROCEDURE.

1. Place 2 cubic centimeters of citrated plasma (oxalated plasma is not satisfactory) in a 50 cubic centimeter volumetric flask containing 30 cubic centimeters of distilled water.
2. Add 10 cubic centimeters of Solution I and make to mark.
3. Allow the mixture to stand five to ten minutes.
4. Filter through a dry filter paper free from chlorides (or separate precipitate by centrifugalization).
5. Take 25 cubic centimeters of the filtrate and back titrate with Solution II, using a white background.
6. Subtract the number of cubic centimeters of Solution II from 25 and multiply by 50 to obtain the number of milligrams of sodium chloride per 100 cubic centimeters of blood plasma.

ACCURACY.

It has been mentioned that each cubic centimeter of the back-titrating solution is equivalent to .5 milligram of sodium chloride, hence a variation of .05 cubic centimeter (about one drop) in back titration represents a variation in the final figure of 2.5 milligrams of sodium chloride per 100 cubic centimeters of plasma. The end-point can be obtained consistently to within two drops, and, since the determinations are made on fluid containing about 575 to 600 milligrams per 100 cubic centimeter, the error is less than 1 per cent. The potassium iodide solution used for back titration in the McLean and Van Slyke method is of such a strength that a variation of .05 cubic centimeter (about one drop) in the back titration introduces a variation in the final figure of 6.25 milligrams per 100 cubic centimeters of plasma.

To test the accuracy of the method, determinations were made of the chloride content of the plasma of a number of individuals by this method, and then salt to the value of 100 milligrams per 100 cubic centimeters was added and the values were again deter-

mined. The figures are given below. The theoretical values (in parentheses) after the addition of salt assume the original determinations (at the left) to be correct.

| PLASMA. | Determined
(Milligrams). | Added
(Milligrams). | Recovered
(Milligrams). | Theoretical
Value
(Milligrams). |
|-----------------|-----------------------------|------------------------|----------------------------|---------------------------------------|
| I, | 600.0 | 100.0 | 700.0 | (700.0) |
| | 595.0 | 100.0 | 697.5 | (695.0) |
| II, | 587.5 | 100.0 | 687.5 | (687.5) |
| | 585.0 | 100.0 | 680.0 | (685.0) |
| III, | 595.0 | 100.0 | 695.0 | (695.0) |
| | 600.0 | 100.0 | 695.0 | (700.0) |
| IV, | 617.5 | 100.0 | 715.0 | (717.5) |
| V, | 612.5 | 100.0 | 715.0 | (712.5) |
| VI, | 595.0 | 100.0 | 692.5 | (695.0) |
| VII,* | 657.5 | 100.0 | 752.5 | (757.5) |
| | 655.0 | 100.0 | 755.0 | (755.0) |
| VIII, | 642.5 | 100.0 | 745.0 | (742.5) |
| IX, | 595.0 | 100.0 | 690.0 | (695.0) |
| X, | 617.5 | 100.0 | 712.5 | (717.5) |

* Ascitic fluid.

To check the method further, parallel determinations were done on samples of plasma by this method and by the McLean and Van Slyke method. A comparison of the values obtained follows: —

| PLASMA. | McLean
and Van Slyke
Method
(Milligrams). | Author's
Method (Milli-
grams.) |
|-----------------|--|---------------------------------------|
| I, | 593.75 | 590.0 |
| | 593.75 | 590.0 |
| II, | 600.0 | 605.0 |
| III, | 587.5 | 592.5 |
| IV, | 625.0 | 617.5 |
| V, | 606.25 | 602.5 |
| | 606.25 | 605.0 |
| VI, | 587.5 | 585.0 |
| | 593.75 | 587.5 |
| VII, | 631.25 | 637.5 |
| VIII, | 593.5 | 587.5 |

When possible to secure enough fluid to permit the use of larger samples (pleuritic or ascitic fluid, ample blood, etc.), the plan of using 5 cubic centimeters is followed. In such instances, place 5 cubic centimeters in a 100 cubic centimeter flask containing distilled water, use 25 cubic centimeters of Solution I and back titrate as before, with 25 cubic centimeters of the filtrate. The figuring is a little different, owing to the different relationship of the standard solutions. Instead of subtracting the sulphocyanate figure from 25 and multiplying by 50, to secure the number of milligrams of sodium chloride in 100 cubic centimeters of the fluid examined, subtract the back-titration figure from 31.25 and multiply the result by 40.

Another modification can be made by using a potassium sulphocyanate solution, each cubic centimeter of which is equivalent to 1 milligram of sodium chloride. By making this solution stronger, a clearer definition of the end-point is obtained, but, of course, it is not as delicate a back-titrating solution as the one mentioned above.

THE KIDNEY FUNCTION IN ONE HUNDRED CASES OF HYPERTENSION.

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Every new feature of diagnosis has in turn been acclaimed as marking a new epoch in the progress of medical science and research. To each new device for gaining additional information regarding the mechanism of the body functions has been given a credit and a promise to which most of them have no claim, and which they usually fail to fulfill. Not that the newer and more accurate methods and instruments for studying bodily functions are not making definite and, in some instances, noteworthy contributions to our knowledge of physiology, both normal and abnormal, but it is equally true that the value assigned to the possibilities of some of these methods has not been realized. The enthusiasm accompanying the introduction of new methods of diagnosis frequently fails to give to such new methods their limited, though possibly great, importance and a natural reaction of distrust follows, resulting in a failure to give the same methods an importance really due them.

The introduction of the sphygmomanometer into clinical medicine opened up a field of investigation previously considered only of laboratory interest. The fervor following its early use and the immense significance assigned to the finding of hypertension are commonplace knowledge, so established in general use that the laity are quite familiar with the expression "high blood pressure." Surely no attempt is made to belittle the use of the instrument, for no physical examination can now be considered adequate which fails to take cognizance of the degree of arterial tension, and a suggestion so obtained of the stress and load on the cardiovascular system is an important item of information.

The very frequent finding of an elevated blood pressure in chronic nephritis led earlier observers to believe hypertension almost pathognomonic of chronic nephritis. The even casual observation of elevated blood-pressure readings thereupon assumed an unwarranted significance. Other observers noted the

frequency of increased readings in nervous diseases to which the diagnosis of some form of arteriosclerotic psychosis was wont to be attached. This led to a feeling that hypertension was practically essential to such a diagnosis of the mental picture, and its value has probably been over-emphasized in textbooks of psychiatry, many of which require that hypertension be present for a diagnosis of arteriosclerotic mental diseases. However, emphasis should again be laid on the fact that the very finding of elevated blood pressure entails careful consideration of the possibility of renal involvement in patients presenting themselves for symptoms consistent with such a possibility.

While it is true that great and possibly too great emphasis has been laid on the relation of hypertension and nephritis, more general observations of blood pressure in general hospitals and private practice have led to a clearer understanding of its significance and an appreciation of the fact that hypertension is common and frequently unassociated with any demonstrable evidences of renal insufficiency.

The present communication is not concerned with a discussion of the causes of high blood pressure or its treatment, but is a report of the study of 100 cases of elevated blood pressure in which some idea of the kidney function has been obtained. The inquiry is into a group of cases of varying ages, for the selection of which the blood pressure values alone have been used as a criterion. Unless otherwise noted, each patient was in apparently good condition, none of them having any edema, fever, dyspnoea, or other conditions within a period which could be considered as influencing the present data, and all were up and about, most of them engaged in working about the wards, dining rooms, farm or industrial rooms. None of the patients were anæmic, the hemoglobin values ranging from 70 to 100 per cent, and the blood cytology presented nothing of note.

The observations which were made consisted of the blood urea, expressed as blood urea nitrogen, the rate of elimination of phenolsulphonaphthalin, the urine analysis, and the blood-pressure readings. The blood urea nitrogen was determined by the Marshall urease method, using the aëration and titration procedure. The determinations were made in each instance on 5 cubic centimeters of citrated blood. The blood-pressure readings were obtained in mid-afternoon for the most part, and the values given represent the mean of a number of readings taken at intervals over a period of several months. The phenol-

sulphonaphthalin test of Rountree and Geraghty was used in the usual manner.

It may be noted that the blood in each instance was drawn before breakfast, about twelve hours after the preceding meal. The plan fails, of course, in securing evidence of a retarded excretion of urea, which might be considered as evidence of a slightly diminished renal efficiency. But the plan does give values which are largely independent of the diet and values which can be considered more or less characteristic of the individual, for determinations made at different times on the same individual are usually quite approximate values. No attempt has been made to determine the rate of excretion of urea by the kidneys, due to the difficulties of administration of such studies. The functional response of the kidneys, as indicated by the use of the two-hour and similar tests, was not investigated.

DISCUSSION OF THE RESULTS.

Since the basis of selection of this group of patients for study was that of elevated blood pressure (150 to 155 millimeters or over), it is worthy of note to learn what proportion of the total hospital population show the finding. Not all the cases of high blood pressure in the institution were included in this inquiry, but about 20 per cent of the patients in the hospital show readings considered as higher than normal (systolic, 110 to 135 millimeters; diastolic, 80 to 90 millimeters), though the values frequently range from 140 to 160 millimeters systolic, 85 to 95 millimeters diastolic, and show considerable variation from time to time.

Another point of interest is the ages of the patients. It will be noted that only 20 of the 100 cases studied were below fifty years of age, the ages ranging from twenty-eight to eighty-eight years. The high incidence of mild degrees of renal insufficiency during and following the fifth decade allows one to predict in any group of individuals of this size the presence of a number of cases who will show some impairment of kidney function.

The possibility of a study of this character on a group of State hospital patients being considered inapplicable to outside conditions seems unlikely. While it is true that all of the patients studied were psychotic, the mental disease can hardly be considered as influencing the renal function. Nor can it be said that an impaired kidney function or a high blood pressure served to any degree as a definite factor in their mental diseases,

and hence lend to the data a feature which would compromise any deductions which could be made from the study. The incidence of high blood pressure among psychotic individuals is probably little different from that found in the general public of the same ages. The wear and tear of competition, worry, intemperance in general, the struggle for a livelihood and other nervous strain placed upon individuals in the general public may possibly tend to place more pro rata cases of hypertension in the public at large than are found in State hospitals. However, the matter of relative frequency in the general population of the feature studied here need call for little consideration.

Using the blood urea nitrogen as a criterion, there is found a mild degree of retention in 37 of 94 cases (39 per cent) in which this determination was made. The figure which one considers as normal for blood urea influences the opinion as to whether there is or is not retention. The values found on patients here whose kidney function is regarded as normal rarely exceed 15 milligrams per 100 cubic centimeters of blood, the blood being drawn, as here, some 12 to 14 hours after the preceding meal. This figure is at variance with the values given by several observers, but under the conditions of diet and hospital routine here it is unusual to find a blood urea nitrogen over 15 to 16 milligrams in cases free from possible renal insufficiency. The usual values range from 9 to 14 milligrams per 100 cubic centimeters of blood. In the group studied there were 29 of the 94 cases (31 per cent) which showed a value of 16 milligrams or higher. There is evidently little if any relationship between the blood urea nitrogen and the blood pressure, either the systolic or diastolic pressure, or the pulse pressure. For instance, of 61 cases showing a systolic blood pressure of 170 millimeters or higher, in which the blood urea nitrogen was determined, 36, or 58 per cent, showed values of 15 milligrams blood urea nitrogen or less per 100 cubic centimeters, and 43, or 70 per cent, showed values below 16 milligrams, whereas 23 cases, or 42 per cent, showed values of over 15 milligrams, and 18, or 30 per cent, showed values over 16 milligrams. Of the 50 cases showing diastolic readings of 100 millimeters or more, 30 cases, or 60 per cent, showed blood urea nitrogen values of 15 milligrams or less, and 36, or 72 per cent, showed values below 16 milligrams, while 20 cases, or 40 per cent, showed values over 15 milligrams, and 14 cases, or 28 per cent, of the number gave values over 16 milligrams.

When the rate of elimination of phenolsulphonaphthalin is examined, it is found that of the 89 patients in whom this observation was made, there were 45 instances in which the dye excretion was established as 40 per cent or less, representing approximately 50 per cent of the cases. Since there were fifteen instances where the value was 40 per cent, there were 30 cases having a value below 40 per cent, 34 per cent of the cases on whom the value was obtained. This figure in a few instances was obtained not long before death, but this number is the same as those in whom there was some question as to the low finding, hence they check each other.

A comparison of the rates of elimination of the dye with the blood-pressure readings fails to suggest any relationship between the excretion and either the systolic or diastolic figures. There were 51 cases showing a systolic pressure of 170 millimeters or over in which the dye elimination was satisfactorily ascertained, and of these, 28 cases, or 55 per cent, showed a figure of 40 per cent elimination or lower, 19 cases (37 per cent) showed values below 40 per cent; the others showed a value of elimination of 45 per cent or greater. Very similar figures were obtained on comparison of the elevated diastolic blood pressure figures, for of the 44 cases showing an elevated diastolic value (100 millimeters or higher), 24, or 55 per cent, of the cases showed a phthalin output of 40 per cent or less; 17, or 39 per cent, of the cases showed a value below 40 per cent.

Considering the interrelationship of the blood urea nitrogen values and the corresponding rates of elimination of phenolsulphonaphthalin where both determinations were made on the same patient, it will be noted that in 29 cases showing a blood urea nitrogen value of 16 milligrams or over, 90 per cent of the same patients showed a dye excretion of 40 per cent or less, only 3 such patients showing an elimination of over 40 per cent. There were 8 cases showing blood urea nitrogen values ranging between 15 and 16 milligrams per 100 cubic centimeters, and of these, 6 showed a phthalin figure of 40 to 50 per cent. It seems quite evident that the transition zone from normal to abnormal blood urea nitrogen is from 15 to 16 milligrams, and closely corresponds with the phthalin excretion values of 40 to 50 per cent.

There were 82 cases in which both the blood urea nitrogen and the phenolsulphonaphthalin elimination were ascertained, and among these there were 23 cases (28 per cent) which had a

nitrogen figure of 16 milligrams or higher, and a phthalin of 40 per cent or less as compared with 3 cases having a nitrogen value of 16 milligrams or over and a phthalin of over 40 per cent. Twenty-nine of these 82 cases (35 per cent) had urea nitrogen figures of 15 milligrams or less, with the dye excretion 40 per cent or less, and 5 with the dye excretion over 40 per cent. The inverse relation of these two factors is well illustrated in these cases and bears out clearly the claim that a low excretion of phenolsulphonaphthalin is usually accompanied by an elevated blood urea.

In this group are found a number of cases of so-called essential hypertension in which the blood urea nitrogen is well within normal limits and the phthalin output is distinctly good (50 per cent or greater), but in which the blood pressure is elevated. There are 24 such cases showing a blood pressure of 160 millimeters or over, 16 with a pressure of 170 or over, and 9 showing a systolic reading of over 190 millimeters.

A number of routine urine examinations were made and albumen demonstrated in 23 cases (23 per cent). There were 4 cases of glycosuria and several more of hyperglycemia (not reported upon). Two instances of hematuria were discovered. No special attempt was made to find casts, but in a routine sediment examination casts were found in small numbers in over one-half of the urines, a customary finding.

Reviewing these findings, it does not seem evident that an elevated blood pressure, either systolic or diastolic, allows of a prediction that the kidney function is depressed, although in this series of cases a considerable number do show evidences of such a depression in function, judging from the blood urea, phenolsulphonaphthalin elimination and urine analysis. No little emphasis has been laid upon the close association of a nephritic process with an elevated diastolic blood pressure especially, but in the cases studied here no claim to such a relationship can be made. This refers to both the blood urea and the dye elimination. It must be borne in mind that many cases do not show an elevated blood pressure, but have elevated blood urea and a corresponding depression of dye excretion.

Probably there are few data in this series bearing on the causal relationship of renal insufficiency and high blood pressure, and such a discussion is beyond the scope of the paper. The opinion that hypertension results from impaired renal excretion raises the question whether or not the reverse may not frequently be

true, that the impaired kidney function results from the hypertension with its concomitant vascular and perivascular changes, which tend to impair the nutrition and function of the kidney parenchyma. That the two phenomena are closely related needs no emphasis, and the finding of hypertension, while not necessarily signifying a nephritis, so far as the more casual examinations indicate, may denote that chronic nephritis will supervene.

In passing, it will be noted that 13 of these patients have died. The usual causes of death in such patients are associated with the cardio-vascular-renal disease or acute infections. Of these patients, 3 died of chronic myocarditis, 3 of cerebral hemorrhage, 3 of pneumonia, 1 of general peritonitis, 1 of cancer of the bladder, 1 of pulmonary tuberculosis, and 1 of general paralysis of the insane. As yet the microscopic examination of the renal tissues has not been done.

SUMMARY.

A study of the blood urea nitrogen, elimination of phenol-sulphonaphthalin and urine analysis was made on 100 cases of elevated blood pressure, using the figure of 150 to 155 millimeters systolic pressure as the low value for selection. With but four or five exceptions, the patients were in apparently good physical condition and active, none showed any edema, dyspnoea, fever or other compromising conditions.

In this group of patients, therefore, it may be said that 70 per cent showed blood urea nitrogen values below 16 milligrams per 100 cubic centimeters (whether considering the whole group or only those showing a systolic value of over 170 millimeters or a diastolic figure of over 100 millimeters), and 66 per cent showed a dye excretion of 40 per cent or higher; 16 per cent showed a value of 40 per cent. A slightly lower percentage was found in those patients showing a higher blood pressure (systolic of 170 millimeters or over, diastolic of 100 millimeters or over). Twenty-eight per cent showed both a urea nitrogen of 16 milligrams or over and a dye excretion of 40 per cent or less. Ninety per cent of the cases showing a urea nitrogen of 16 milligrams or over had a dye excretion of 40 per cent or less. Twenty-four of the cases showed a blood pressure over 160 millimeters, a urea nitrogen below 15 milligrams and a phthalin over 50 per cent. The presence of albuminuria and cylindruria in the type of case studied here does not allow a prediction that the renal efficiency is impaired, if we choose to judge the efficiency by the features to which reference has been made.

| Number. | Age. | Blood Pressure. | Blood Urea Nitrogen. | URINE. | | | | | Renal Function (Per Cent). |
|---------|------|-----------------|----------------------|-------------------|----------|--------|--------|--|----------------------------|
| | | | | Specific Gravity. | Albumen. | Sugar. | Blood. | Sediment. | |
| 1* | 58 | 170-70 | - | 1018 | tr. | 0 | pos. | R. B. C. hyal. casts. | 30 |
| 2* | 50 | 192-90 | 16.2 | 1026 | s. t. | pos. | pos. | Pus.
Occ. R. B. C. pus-hyal. casts. | 25 |
| 3 | 64 | 175-100 | 19.6 | 1012 | 0 | 0 | 0 | Rare hyal. casts. | 30 |
| 4 | 57 | 165-95 | 15.4 | 1020 | 0 | 0 | 0 | Few hyal. casts. | 40 |
| 5 | 55 | 160-90 | - | 1020-28 | v. s. t. | 0 | 0 | Few gran. casts. | 30 |
| 6 | 67 | 160-95 | 18.5 | 1030 | v. s. t. | 0 | 0 | Many hyal. casts. | 35 |
| | | | 19.9 | | | | | | |
| 7 | 48 | 170-120 | 15.4 | 1020-28 | 0 | 0 | 0 | Rare hyal. casts. | 40 |
| 8 | 65 | 175-90 | 16.2 | 1010 | s. p. t. | 0 | 0 | Occ. hyal. casts. | 40 |
| 9 | 54 | 150-90 | 15.4 | 1022 | s. p. t. | 0 | 0 | No casts. | 40 |
| | | | 15.9 | | | | | | |
| 10 | 65 | 180-100 | 16.2 | 1012 | s. p. t. | 0 | 0 | Occ. hyal. casts. | uncoop. |
| 11 | 71 | 210-120 | 14.3 | 1016-30 | 0 | 0 | 0 | Occ. gran., rare hyal. casts. | uncoop. |
| | | | 16.5 | | | | | | |
| 12 | 50 | 160-80 | 11.7 | 1022 | 0 | 0 | 0 | Rare gran. casts. | 50 |
| 13* | 83 | 215-100 | 20.2 | 1020 | 0 | 0 | 0 | Occ. hyal. casts. | 25 |
| 14 | 77 | 170-95 | 17.9† | 1020-22 | 0 | 0 | 0 | Occ. hyal. casts. | 70‡ |
| | | 210-90 | 15.7 | | | | | | 55§ |
| | | | | | | | | | 35† |
| 15 | 71 | 200-120 | 12.9 | 1020 | 0 | 0 | 0 | Rare hyal. casts. | 50 |
| | | | 11.7 | | | | | | |
| | | | 13.4 | | | | | | |
| 16 | 74 | 220-105 | 9.2 | 1018 | 0 | 0 | 0 | Rare hyal. casts. | 50 |
| | | 160-95 | 8.4 | | | | | | |
| 17* | 70 | 240-115 | 34.8§ | 1010-18 | s. t. | 0 | 0 | Occ. gran. | 45‡ |
| 18 | 47 | 175-95 | 11.2 | 1015 | 0 | 0 | 0 | No casts. | 35 |
| 19 | 75 | 180-100 | 12.3 | 1011-20 | 0 | 0 | 0 | Rare hyal. casts. | disch. |
| 20 | 48 | 160-105 | 15.4 | 1020-28 | 0 | 0 | 0 | No casts. | 40 |
| 21* | 58 | 200-110 | 17.1 | 1012 | 0 | 0 | 0 | Occ. gran. casts. | 15 |
| | | | 17.9 | | | | | | |
| 22 | 63 | 190-95 | 15.7 | 1022-30 | s. t. | pos. | 0 | Few hyal. casts. | 5 |
| | | | | | | | | | 5 |
| 23 | 56 | 190-110 | 14.0 | 1014 | 0 | pos. | 0 | No casts. | 40 |
| 24 | 58 | 170-100 | 11.8 | 1020 | 0 | 0 | 0 | No casts. | 30 |
| 25 | 55 | 165-90 | 15.7 | 1018 | 0 | 0 | 0 | No casts. | 45 |
| | | | 11.5 | | | | | | |

* Died.

† 1918.

‡ 1916.

§ 1917.

| Number. | Age. | Blood Pressure. | Blood Urea Nitrogen. | URINE. | | | | | Renal Function (Per Cent). |
|---------|------|-----------------|----------------------|-------------------|----------|--------|--------|-----------------------------|----------------------------|
| | | | | Specific Gravity. | Albumin. | Sugar. | Blood. | Sediment. | |
| 26 | 60 | 175-105 | 20.2 | 1018-22 | 0 | 0 | 0 | No casts. | 20 |
| | | | 21.3 | | | | | | |
| 27 | 57 | 195-120 | 15.4 | 1008-30 | 0 | 0 | 0 | Rare hyal. casts. | 60 |
| | | 216-124 | 15.7 | | | | | | |
| | | 170-80 | 12.0 | | | | | | |
| 28 | 63 | 195-120 | - | 1010 | 0 | 0 | 0 | Occ. gran. casts. | 20 |
| 29 | 45 | 155-95 | 11.5 | 1015 | s. p. t. | 0 | 0 | No casts. | 50 |
| 30 | 50 | 170-95 | 15.4 | 1028 | 0 | 0 | 0 | No casts. | 40 |
| 31 | 77 | 180-90 | 9.2 | 1014 | 0 | 0 | 0 | No casts. | 55 |
| | | 210-85 | 13.4 | | | | | | |
| | | | 15.1 | | | | | | |
| 32 | 88 | 200-140 | 16.8 | 1008-22 | 0 | 0 | 0 | Occ. gran. and hyal. casts. | 35 |
| | | 180-115 | 16.8 | | | | | Hyal. casts. | |
| 33 | 70 | 160-100 | 16.5 | 1006-12 | 0 | 0 | 0 | Gran. casts. | 30 |
| 34 | 78 | 152-80 | 11.2 | 1014-22 | 0 | 0 | 0 | Hyal. and gran. casts. | uncoop. |
| | | | 12.3 | | | | | | |
| 35* | 65 | 190-110 | 16.3 | 1021 | v. s. t. | 0 | 0 | Hyal. and gran. casts. | |
| 36 | 65 | 200-95 | 12.8 | 1012 | 0 | 0 | 0 | Few hyal. casts. | 40 |
| 37 | 51 | 160-120 | 9.2 | 1015 | v. s. t. | 0 | 0 | No casts. | 55 |
| 38 | 61 | 180-110 | 14.3 | 1020 | 0 | 0 | 0 | No casts. | 50 |
| 39 | 73 | 182-120 | 10.6 | 1022 | 0 | 0 | 0 | Rare hyal. casts. | 35 |
| | | | 13.4 | | | | | | |
| 40 | 66 | 160-120 | 13.4 | 1002-24 | 0 | 0 | 0 | No casts. | 30 |
| 41 | 77 | 180-90 | 12.1 | 1024 | 0 | 0 | 0 | No casts. | 45 |
| | | | 11.8 | | | | | | |
| 42 | 60 | 210-110 | 9.5 | 1012 | 0 | 0 | 0 | No casts. | 50 |
| | | 180-100 | 12.3 | | | | | | |
| 43 | 39 | 155-85 | 10.6 | 1025 | 0 | 0 | 0 | Few gran. casts. | 65 |
| 44 | 70 | 170-90 | 22.4† | 1012-24 | s. p. t. | 0 | 0 | Hyal. and gran. casts. | 50§ |
| | | | 15.4 | | | | | | |
| | | 180-95 | 19.9 | | | | | | 35† |
| 45 | 72 | 160-90 | 20.2 | 1020 | s. t. | 0 | 0 | Gran. casts. | 15 |
| | | | 18.2 | | | | | | |
| 46 | 71 | 155-90 | 13.4 | 1014 | s. p. t. | 0 | 0 | Occ. hyal. casts. | uncoop. |
| 47 | 68 | 210-155 | 12.3 | 1010 | 0 | 0 | 0 | Occ. hyal. casts. | 55 |

* Died.

† 1918.

§ 1917.

| Number. | Age. | Blood Pressure. | Blood Urea Nitrogen. | URINE. | | | | | Renal Function (Per Cent). |
|---------|------|-----------------|----------------------|-------------------|----------|--------|--------|-----------------------------------|----------------------------|
| | | | | Specific Gravity. | Albumen. | Sugar. | Blood. | Sediment. | |
| 48 | 67 | 160-100 | 17.4 | 1012-30 | 0 | 0 | 0 | Occ. hyal. casts. | 30 |
| | | | | | | | | | 40 |
| 49 | 54 | 175-120 | 9.5 | 1012-18 | 0 | 0 | 0 | No casts. | 50 |
| | | | 14.0 | | | | | | |
| 50 | 65 | 160-100 | 23.2 | 1018-30 | 0 | 0 | 0 | Few gran. casts. | 55 |
| | | | 18.7 | | | | | | |
| | | | 20.7 | | | | | | |
| 51 | 57 | 160-95 | 12.0 | 1015 | 0 | 0 | 0 | No casts. | 40 |
| 52 | 45 | 155-85 | 17.4 | 1025 | s. p. t. | 0 | 0 | Occ. hyal. casts. | 10 |
| | | | | | | | | | 5 |
| 53 | 55 | 165-110 | 21.3 | 1012-20 | s. p. t. | 0 | 0 | Occ. hyal. casts and gran. casts. | 10 |
| 54 | 68 | 160-95 | 15.9 | 1016 | 0 | 0 | 0 | No casts. | 50 |
| | | | 15.4 | | | | | | |
| 55 | 71 | 155-90 | 21.8 | 1020 | 0 | 0 | 0 | Many hyal. casts. | 60 |
| | | | 19.0 | | | | | Gran. casts. | |
| | | | 17.4 | | | | | | |
| 56 | 70 | 170-85 | 11.7 | 1004-20 | 0 | 0 | 0 | Hyal. and gran. casts. | 50 |
| | | | 12.3 | | | | | | |
| 57 | 37 | 160-110 | 12.9 | 1028 | 0 | 0 | 0 | No casts. | 45 |
| 58* | 79 | 170-110 | 10.1 | 1025 | s. t. | 0 | 0 | Few gran. casts. | 25+ |
| | | 150-80 | 11.2 | | | | | | incont. |
| | | | 15.1 | | | | | | |
| 59* | 70 | 230-100 | 21.8 | 1018 | 0 | 0 | 0 | No casts. | 30 |
| | | | 16.9 | | | | | | |
| 60 | 78 | 180-95 | 14.0 | 1022 | tr. | 0 | 0 | Few gran. casts. | 30 |
| | | 210-80 | 10.1 | | | | | | |
| 61 | 87 | 165-60 | 23.3 | 1020 | 0 | 0 | 0 | Pus. No casts. | 15 |
| | | | 29.9 | | | | | | |
| 62 | 71 | 170-90 | 17.4§ | 1010 | 0 | 0 | 0 | Rare hyal. casts. | 35† |
| | | | | | | | | | 55§ |
| 63 | 65 | 170-100 | 13.4 | 1019-22 | 0 | 0 | 0 | No casts. | 50 |
| | | | 13.7 | | | | | | |
| 64 | 44 | 175-120 | 10.1 | 1014 | 0 | pos. | 0 | Rare hyal. casts. | 0? |
| | | 210-105 | 12.3 | | | | | | |
| 65 | 59 | 180-115 | 13.4 | 1013 | 0 | 0 | 0 | No casts. | 40 |

* Died.

† 1916.

§ 1917.

| Number. | Age. | Blood Pressure. | Blood Urea Nitrogen. | URINE. | | | | | Renal Function (Per Cent). |
|---------|------|-----------------|----------------------|-------------------|----------|--------|--------|-------------------|----------------------------|
| | | | | Specific Gravity. | Albumin. | Sugar. | Blood. | Sediment. | |
| 66 | 52 | 155-90 | - | 1021 | 0 | 0 | 0 | No casts. | 5? |
| 67 | 79 | 155-85 | 18.5 | 1025 | 0 | 0 | 0 | Few gran. casts. | 40 |
| 68 | 74 | 180-100 | 9.5 | 1020 | 0 | 0 | 0 | Occ. hyal. casts. | 70½ |
| | | 170-95 | 14.0 | | | | | | |
| | | | 13.7 | | | | | | |
| | | | 14.6 | | | | | | 50† |
| 69 | 58 | 210-130 | - | 1002-14 | 0 | 0 | 0 | Occ. hyal. casts. | 15 |
| 70 | 57 | 170-95 | 6.7 | 1018-25 | 0 | 0 | 0 | No casts. | uncoop. |
| 71 | 48 | 165-95 | 14.0 | 1020-28 | 0 | 0 | 0 | No casts. | 55 |
| 72 | 32 | 160-90 | 9.0 | 1020-30 | 0 | 0 | 0 | No casts. | 50 |
| | | | 12.9 | | | | | | |
| 73 | 57 | 220-140 | 11.8 | 1010 | 0 | 0 | 0 | Occ. hyal. casts. | 10 |
| 74 | 47 | 150-85 | 11.2 | 1010-26 | 0 | 0 | 0 | No casts. | 55 |
| | | | 11.8 | | | | | | |
| 75 | 65 | 195-110 | 14.0 | 1012-19 | 0 | 0 | 0 | No casts. | 30 |
| 76 | 53 | 190-105 | 10.1 | 1028 | 0 | 0 | 0 | No casts. | 50 |
| | | 205-95 | 12.3 | | | | | | |
| 77 | 87 | 240-90 | 9.2 | 1016-18 | 0 | 0 | 0 | Few gran. casts. | 65 |
| | | 180-95 | 10.1 | | | | | | |
| | | | 8.7 | | | | | | |
| 78 | 44 | 155-90 | 12.6 | 1010-26 | 0 | 0 | 0 | No casts. | 50 |
| 79* | 60 | 180-90 | 12.3 | 1008-20 | s. t. | 0 | 0 | Occ. gran. casts. | - |
| 80 | 59 | 165-100 | 10.6 | 1010-26 | 0 | 0 | 0 | No casts. | 50 |
| 81 | 75 | 200-110 | 15.4 | 1004-28 | 0 | 0 | 0 | Rare hyal. casts. | 60 |
| | | 160-110 | 13.2 | | | | | | |
| 82 | 47 | 150-95 | 9.2 | 1017-26 | 0 | 0 | 0 | No casts. | 55 |
| 83 | 48 | 180-110 | 11.2 | 1010-25 | 0 | 0 | 0 | No casts. | 15? |
| 84 | 66 | 225-130 | 12.3 | 1032 | 0 | 0 | 0 | Rare hyal. casts. | uncoop. |
| 85 | 43 | 165-100 | 14.6 | 1020 | 0 | 0 | 0 | No casts. | 50 |
| | | | 14.0 | | | | | | |
| 86 | 63 | 155-100 | - | 1018 | v. s. t. | 0 | 0 | No casts. | 70 |
| 87 | 63 | 220-90 | 12.3 | 1022-24 | 0 | 0 | 0 | No casts. | 50 |
| | | 160-95 | 12.9 | | | | | | |
| 88 | 50 | 170-110 | 10.6 | 1025 | 0 | 0 | 0 | No casts. | 55 |
| | | | 11.8 | | | | | | |
| 89 | 61 | 160-80 | 14.0 | 1020-24 | 0 | 0 | 0 | No casts. | 15 |

* Died.

†1918.

§1917.

| Number. | Age. | Blood Pressure. | Blood Urea Nitrogen. | URINE. | | | | | Renal Function (Per Cent). |
|---------|------|-----------------|----------------------|-------------------|----------|--------|--------|-----------------------------|----------------------------|
| | | | | Specific Gravity. | Albumin. | Sugar. | Blood. | Sediment. | |
| 90* | 73 | 160-95 | 7.3 | 1020 | tr. | 0 | 0 | Hyal. and gran. casts. | - |
| 91 | 45 | 160-95 | 15.1 | 1018 | 0 | 0 | 0 | No casts. | 50 |
| | | 190-110 | 15.1 | | | | | | |
| 92 | 38 | 170-110 | 19.6 | 1016 | 0 | 0 | 0 | Rare gran. casts. | 25 |
| | | | 18.5 | | | | | | |
| 93* | 42 | 175-100 | 8.4 | 1026 | 0 | 0 | 0 | No casts. | - |
| 94* | 81 | 190-90 | 15.1 | 1018-20 | s. t. | 0 | 0 | Occ. hyal. and gran. casts. | uncoop. |
| | | 240-30 | 15.4 | | | | | | |
| | | | 20.3 | | | | | | |
| 95* | 75 | 150-95 | 23.0 | 1012-20 | 0 | 0 | 0 | Gran. casts. | 30 |
| | | | 23.5 | | | | | | |
| 96 | 76 | 170-80 | 17.6 | 1035 | 0 | 0 | 0 | Few gran. casts. | 40 |
| | | | 17.6 | | | | | | |
| 97 | 70 | 270-130 | 14.6 | 1024 | 0 | 0 | 0 | No casts. | 40 |
| 98 | 28 | 250-105 | 15.1 | 1012 | 0 | 0 | 0 | No casts. | 40 |
| | | | 17.9 | | | | | | |
| 99 | 48 | 180-120 | 14.0 | 1016 | 0 | 0 | 0 | Occ. hyal. casts. | 45 |
| 100 | 76 | 150-95 | 11.2 | 1020-30 | 0 | 0 | 0 | Gran. and hyal. casts. | 60 |
| | | | 15.9 | | | | | | |

* Died.

Number of patients studied, 100
 Range of ages (years), 28 to 88
 Number over 50 years of age, 80
 Incidence of elevated pressure in hospital, about, . . . 20 per cent
 Blood urea nitrogen determined on, 94
 Upper normal value considered (milligrams), . . . 15-16
 Over 15 milligrams, 100 cubic centimeters blood, . . 37 (39 per cent)
 Over 15 milligrams, 29 (31 per cent)
 Blood urea nitrogen:—
 (a) Systolic value of 170 millimeters or over, . . . 62
 Blood urea nitrogen determined, 59
 15 milligrams or less per 100 cubic centimeters
 blood, 36 (58 per cent)
 Over 15 milligrams, 23 (42 per cent)
 16 milligrams or less, 41 (70 per cent)
 Over 16 milligrams, 18 (30 per cent)

| | |
|---|------------------|
| (b) Diastolic value of 100 millimeters or over, | 53 |
| Blood urea nitrogen determined, | 50 |
| 15 milligrams or less per 100 milligrams blood, | 30 (60 per cent) |
| Over 15 milligrams, | 20 (40 per cent) |
| 16 milligrams or less, | 36 (72 per cent) |
| Over 16 milligrams, | 14 (28 per cent) |
| Excretion of phenolsulphonaphthalin: — | |
| Number determined, | 89 |
| Value below 40 per cent, | 30 (34 per cent) |
| Value of 40 per cent, | 15 (16 per cent) |
| Systolic pressure of 170 millimeters or over: — | |
| Cases done, | 51 |
| Below 40 per cent, | 19 (37 per cent) |
| 40 per cent or below, | 28 (55 per cent) |
| Diastolic value of 100 millimeters or over: — | |
| Cases done, | 44 |
| Below 40 per cent, | 17 (37 per cent) |
| 40 per cent or below, | 24 (55 per cent) |
| Number with urea nitrogen of 16+ milligrams on whom | |
| phthalin was done, | 29 |
| Elimination of 40 per cent or less, | 26 (90 per cent) |
| Number with urea figure 15–16 milligrams, | 8 |
| Elimination in same of 40 to 50 per cent, | 6 (75 per cent) |
| Both urea and dye excretion done, | 82 |
| Urea of 16 milligrams or over and dye of 40 per cent | |
| or less, | 23 (28 per cent) |
| Urea of 15 milligrams or over, dye of 40 per cent or | |
| less, | 29 (35 per cent) |
| Number of cases of “essential or vascular hypertension” | |
| (urea below 15 milligrams, dye over 50 per | |
| cent), | 24 |
| Urine analysis (routine examination): — | |
| Albuminuria, | 23 |
| Glycosuria, | 4 |
| Hematuria, | 2 |
| Cylindruria, | 53 |
| Deaths since study, | 13 |
| Causes associated with cardiovascular system or | |
| acute infections, | 10 |

There have been 13 deaths in this group with 11 autopsies. The causes of death in 10 of the 13 cases were associated with either the cardiovascular system or acute infections.

NOTES ON CASES.

1. Had hematuria, cancer of bladder.
3. Patient in bed, aphasic, confused.
17. Blood urea nitrogen determination five days before death.
22. Phthalin done six months apart. Patient still about, despite low figures.
52. Phthalin done five months apart.
89. Patient in wheel chair, — a case of general paresis.
93. Patient in bed, — case of tabo-paresis.

AN UNDEVELOPED OPPORTUNITY FOR THE STUDY OF THE PROGNOSIS OF CHRONIC DISEASES.

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The most important and vital feature of medical knowledge is a proper understanding of prognosis of diseases. The internist may make a brilliant diagnosis, the electrocardiographer may reveal previously but little understood anomalies of heart behavior, the laboratory worker may render an unexpected and significant opinion, the pathologist may make exhaustive analyses of post-mortem findings, all of which represent exceedingly important sources of information and give to present-day students of medicine opportunities for diagnosis not afforded to their predecessors of but a few years. And yet these varied accomplishments and armamentaria of increased efficiency fail to take into consideration the most vital feature of disease from the viewpoint of the patient and the progress of medical therapy, namely, prognosis.

The patient himself is interested in a brilliant diagnosis or the discovery of a formerly overlooked unique feature of his ailment only in so far as it concerns his future health and his life. He is interested in the diagnosis itself primarily only in so far as it throws light upon the possibilities of his future, and he is more interested in knowing to what the present findings point than in what the disease may be. It is the outcome rather than the diagnosis which interests the patient.

That a physician may understand the prognostic import of the conditions he finds and of the diagnosis which he attaches to the presenting clinical pictures implies a knowledge of the life history of the disease in question. This is particularly true in the chronic diseases which are becoming yearly of more importance and an increasing cause of mortality. With the knowledge of the entire course of a given disease, the development of abnormal signs or the progression of present signs carries a definite significance to a man so trained and forms the basis of an intelligent prognosis.

Such a training implies not only a knowledge of abnormal signs and their significance, but quite as well the normal varia-

tions which may carry no prognostic or even diagnostic import beyond that they may be recognized as deviations from the normal. This matter is well illustrated in the examinations of recruits and the return of men in active service to base hospitals, in both of which groups are found very considerable numbers of men possessing a supposedly valvular heart disease because of the presence of murmurs. The great frequency of blowing systolic murmurs or whiffs at the base or apex of the heart is a matter of general observation, but they are too frequently ascribed an importance to which they are not entitled. Another illustration is in the promptness with which a diagnosis of nephritis is made upon albumen being discovered in the urine or an elevated blood pressure found at examination. It is true, of course, that these features require investigation, but should be recognized only in their relation to the whole clinical picture.

The only method whereby the significance of various signs and symptoms in a given disease can be properly determined is by studying the disease from start to finish. One should see the disease at its very earliest manifestations, or, better still, study the individual before the disease has appeared. It should be followed step by step throughout its course and every sign, symptom or treatment recorded, and this method applied to a number of cases so one may secure a grasp of the variations and responses in a number of patients afflicted with the disease.

Since the problem of prognosis in chronic diseases is one of securing adequate study of these diseases from the very onset, it is well to inquire into the present methods of making such study. It is at once evident that the opportunities offered for the study of chronic diseases, from their very onset to termination, are indeed few, and this very paucity probably explains the incomplete knowledge we possess of their prognosis.

Our thoughts turn to the wards and laboratories of general hospitals where chronic diseases are studied and investigated, and where annually many patients suffering from them are treated. But it is apparent that the opportunities which these students and investigators have are not as great as one might expect, for they see but a cross section of the disease, and gain but little idea of its onset and evolution, and the short time the patient is kept in the hospital adds only fragmentary information.

It is true that after discharge from the house patients are followed in the out-patient departments, and further knowledge

is acquired during the months or years that such patients are followed. But the records of these cases are inadequate, the difficulties of following cases are very great, and the infrequency of examination of the patient tends to discount the actual value of the efforts as a study of prognosis. The establishment of out-patient classes for diabetes, nephritis, tuberculosis, and other diseases is designed in large part for treatment, though valuable information relating to prognosis is gathered. The follow-up work of social service organizations is also contributing toward the sum total of our knowledge of diseases, but here again the possibilities are greatly restricted.

The frequent appearance in out-patient clinics of individuals showing early evidence of disease allows some study of the early progress of the process. But merely because the process is not well established and the actual evidence of disease is slight, these patients are not sent into the house for study, where more accurate and valuable data could be collected. On the other hand, the cases usually sent into the house are in stages when the signs are well established and treatment directed largely to palliative methods. Could the patients showing obscure indications be more thoroughly studied under the facilities found in the hospital wards, much valuable information could be obtained, and our knowledge of the early evidences of a disease process be greatly enhanced.

Granting that the present method of inquiry is inadequate in forming comprehensive understanding of the development and course of chronic diseases, it is well to ask as to other possibilities. It must be borne in mind that only a small, though ever-increasing proportion of the sick enter hospitals or are cared for in the out-patient departments, the greater number seeking advice and treatment of the practitioner. To the practitioner, then, is offered an unusual opportunity for the very sort of study to which we must look for further contribution to our understanding of prognosis. It is he who sees the cases early in their development, who is called at the appearance of symptoms, and who has an opportunity to follow the disease throughout its course. A general realization of these opportunities, however, is wanting, for but little in the line of study and research is done by the general practitioner, though the remarkable contributions of Sir James MacKenzie to our knowledge of affections of the heart is a striking example of what can be done by a practitioner.

While the practitioner has the opportunity to see the process of disease as it is not seen in hospital practice, the ability to

utilize such opportunities is limited. As a rule, the practitioner has not the equipment to carry on the accurate studies which should be made on patients under observation, and the remuneration for doing so would be out of proportion to the benefit evident to the patient. The majority of practitioners have not the time to do this kind of work, granted that they may have the necessary laboratory and other equipment. And to provide technical assistants who can do the work entails an expense which most practitioners feel unwilling or unable to assume themselves. And though endowments and funds are available for similar work in established institutions, it is to be deplored that no provision is made for study of the courses of diseases where they can better be observed.

We look also to life insurance statistics for information relative to the potential significance of various evidences of disease, but our hope is futile. One obtains but little knowledge of the prognostic value of signs and symptoms of disease from these records, and the infrequency of examinations of policyholders to ascertain new features makes the value of the records but slight.

The possibilities in community medicine, contract medicine, and various organizations designed to build up better health and longer lives, are as yet imperfectly developed, though from them we should gain some information.

The opportunities offered by State institutions for the study of prognosis in disease are little recognized, and developed less, and yet these hospitals offer provision for a better study of the problem than any other means. It is here that the patients are under observation for years in many instances, and, unlike the patients under the care of practitioners, they are seen regularly, at any time, and as frequently as desired. The development of laboratory and other facilities for accurate study of these patients in State hospitals insures that sufficiently comprehensive examinations can be made so that the value of various manifestations of disease may be appraised with accuracy. New developments in disease can be recognized early, and their prognostic import, or possible relations to other features of the disease, determined. The considerable proportion of patients dying in State hospitals upon whom post-mortem studies are done allows for further corroboration of diagnosis and study of the disease upon which considerable data had been collected during life. By such a correlation of clinico-pathological data, with supplementary study of the necropsy findings, the recognition of a not inconsiderable and unimportant group of relationships could be

expected. The value of such a study, if sufficiently comprehensive, is obvious.

That the opportunity for studying the prognosis of diseases with which internal medicine is primarily concerned does carry some promise seems apparent. For example, in the State of Massachusetts a very considerable proportion of the cases of pellagra reported to the State Board of Health is found in the State institutions. Here such patients are living under an environment and on a diet along with many other individuals, most of whom do not suffer from nor later develop the disease. The large number of controls, the ease with which dietary changes can be made, and the facility with which frequent observations can be made, are evident, and the likelihood of knowing the ultimate outcome is great; and it is somewhat this very sort of study to which pellagra has been subjected by numerous investigators.

The early enthusiasm of workers in neurosyphilis, which allowed them to predict by the gold sol test the seat of the syphilitic process, whether of the parenchyma, vessels and meninges, or interstitial tissue and other localizations, to which predictions could be attached prognostic importance, has been replaced by a more conservative attitude. For the subsequent development of these same cases has not borne out the earlier predictions in their entirety, and as the number of carefully and completely studied cases increases, our valuation of this particular test in delineating the principal seat of the process becomes adjusted.

The prognosis of various diseases of the kidneys and the signs or symptoms developing during the course of such diseases is still a matter of much uncertainty because of our incomplete knowledge of the course of chronic interstitial nephritis, for instance. This particular problem has been of special interest to us, and a start on the study of the disease, humble in its proportions, to be sure, has been begun, having in mind to gain early recognition of the disease and to follow it through in as many instances as possible. Since 70 per cent of the patients dying here are studied post mortem, it is to be hoped that some value may be attached to the ante-mortem study. The studies have thus far been confined largely to blood nitrogen, chloride and sugar determinations, urine and blood-pressure examinations, the determination of phenolsulphonaphthalin excretion, etc., in their interrelations and their possible relationship to the structural changes found on later study of the kidneys themselves. Only

a small beginning has been made, but the attempt has yielded some encouragement, at least. The various chronic diseases of liver, heart, pancreas, endocrine glands, neuromuscular system, and other organs, require much study, the scope of possibilities is great, and the intensive study of them over long periods is sure to yield results.

The importance of focal infections in chronic diseases is being much emphasized, and the literature pertaining thereto is rapidly becoming voluminous. The frequent relief of troublesome symptoms and the more favorable progress of treatment, in many instances, upon the removal of a septic focus, need no emphasis. The exact mechanism of such improvement is not always clear, and careful clinico-pathological studies in greater numbers should give us further understanding of the great importance of focal infection. The recent development of dental hygiene, the training courses for dental hygienists, and the utilization of these individuals in our State institutions, permit us to study this very important feature, the rôle of suppurative oral foci in chronic diseases, under well-controlled conditions.

That the spirit of such studies can be misconstrued seems unlikely. An increasing appreciation of our duties to the patients in State hospitals requires that we devote our best efforts toward their proper care and treatment. That we should understand their condition and the diseases from which they suffer is requisite to that intelligent care and treatment. The insignificant discomfort to which they might be subject by examination is only the experience of every patient in general hospitals at large. On the whole, the co-operation of the patients is very good, almost as good as it is with people in general.

The greater development of pathological and clinico-pathological laboratories, the introduction of the new methods of blood analysis, and various other features of diagnosis and investigation, and an awakening responsibility to the patients themselves, stimulate us in an endeavor to study the diseases which are found so commonly among the patients, and in so doing further our knowledge of the diseases themselves. It is by availing ourselves of this as yet but little developed opportunity of studying disease where we have both facilities and the patients under prolonged and constant observation, where we have an opportunity to follow diseases throughout their entire life history, that we may hope to obtain more complete and reliable information relating to prognosis than by the other less satisfactory methods.

THE BLOOD UREA NITROGEN IN CATATONIA.

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The striking clinical picture of the mute, apathetic and semistuporous phases of catatonia as seen in the catatonic form of dementia præcox suggests a definite metabolic derangement at least associated with the mental picture. The physical phenomena of lowered blood pressure, slow heart action, peripheral stasis as evidenced by the cold, clammy and cyanosed extremities, dermatographism, lowered body temperature, slow, shallow respirations, the polycythemia (probably associated with the peripheral stasis), the lethargy, sluggishness of response and semistuporous attitude, the constipation and generally lowered muscular tone point to depressed vital activity. The features are, of course, not strictly applicable to the excited states seen in this form of dementia præcox.

An inquiry into this condition has been begun and the present is a report of the blood urea nitrogen findings in a small group of cases. A number of similar determinations were made on other patients of approximately the same age and living on the same diet, to serve as controls. The determinations were made by the Marshall urease method, the blood being drawn in each instance before breakfast, about twelve hours after the preceding meal. Five cubic centimeters of blood were used for each determination.

The values as given below show a distinct drop in the blood urea nitrogen when the patient goes into catatonia, the figure in several cases being about 50 per cent or less of the normal values (considered as ranging from 9 to 15 milligrams per 100 cubic centimeters of blood). The marked drop in the values occurs rapidly and early in the development of evidence of the catatonic state. In several instances in which the determinations were made within a few hours after the onset of signs of the condition, the blood urea nitrogen had already dropped considerably. Several of the patients have been under observation for about eight months and their blood has been studied quite frequently.

All of the patients studied have been rather mild cases, all took the house diet voluntarily and in approximately normal

amounts, thus eliminating in large measure the factor of diet. Urine examinations were made at various intervals and none of the cases showed any evidences of renal process. To further control the kidney factor, the rate of elimination of phenol-sulphonaphthalin was ascertained in a few cases, as far as practical in various stages of the catatonia. In no case was the dye excretion abnormal (ranging from 55 per cent to 65 per cent). It has been possible in several instances to secure the urea values before, during and after the catatonic state on patients who have continued to eat throughout, and it has been interesting to note the return of the urea values to normal, concomitant with the return of more normal physical and mental findings.

The significance of this finding is not at once apparent. The possibility of it being the result of a lowered protein intake has been largely controlled by the selection of only patients who continued to eat during the study and by parallel determinations of the blood urea nitrogen of other patients living on the same diet and in whom there was no reason to suspect abnormal metabolism. By using blood drawn so long after the preceding meal, the factor of diet is further eliminated, though the blood urea is but little influenced by diet if the kidneys are normal. The drop in the urea values also occurs too promptly after the first evidence of the catatonic state to be accounted for by any slight decrease in protein intake that might have occurred. An incomplete protein absorption from the intestinal tract suggests itself also. The findings of abnormal nitrogenous substances in the stools of patients suffering from dementia præcox suggests some support to this possibility. But there seems to be no reason for assuming any degree of absorption malfunction apart from the general features of the disease, and the abnormal protein substances in the stools are probably attributable to hydrolytic processes associated with the intestinal stasis. The possibility of the low figures being due to renal stimulation and rapid elimination of urea has been considered but nothing to indicate that feature is evident.

An association of this phenomenon with the evident metabolic upset seems justifiable and logical. The finding as an evidence of an endocrinopathy is to be considered. But it seems more reasonable to assume it as a measure of lowered endogenous metabolism, probably closely associated with the hypotonic state of the vasomotor system. It would then fit into the clinical

picture of peripheral stasis, slow cardiac and respiratory activity, constipation, low blood pressure, etc.

In favor of this assumption is the fact that measures taken to increase vasomotor tone, when successful, frequently bring recovery to normal condition. For example, patient "A" has had regular periods of typical catatonia for several years, but since he has been put at manual work, he has not had another period, though the present time interval has been at least three times as long as previous periods free from catatonic manifestations, the presumption being that the manual labor has tended to maintain good vasomotor and muscular tone. The improvement in patients in general when placed at work is a common observation and is probably due in part to some such improvement in general tonus. The findings of low blood chloride (which have been made on some of these patients also) in cases of dementia præcox and the improvement following intravenous saline solution as reported by several Japanese and American investigators may be a similar response, in which the intravenous saline tends to elevate the blood pressure, especially the diastolic figure which in these cases is relatively lower than the systolic.

An attempt to consider the finding of a low blood urea nitrogen in this condition as a feature of a hypotonic vasomotor system is not inconsistent with a disturbance of one of the endocrine glands or systems, for the vasomotor phenomena may well be evidences of such a disturbance. But a theoretical discussion of the interrelation of the endocrine glands, the autonomic nervous system, cardiovascular system and metabolism is not the purpose of the present communication.

SUMMARY.

The blood urea nitrogen values show a marked and prompt drop when the patient enters into the apathetic and semistuporous phases of catatonia as seen in the catatonic form of dementia præcox — the figures being about 50 per cent or less of the normal values which are considered as ranging from 9 to 15 milligrams per 100 cubic centimeters of blood.

Studies were made only on patients who ate during the period. As a further control of the factors of diet, parallel determinations were made on the blood of other patients on the same diet and ward routine. In all cases, the blood was drawn before breakfast about twelve hours after the preceding meal.

The phenomenon is considered as a feature of deranged nitrogenous metabolism probably associated with the hypotonic vaso-

motor system (as shown by the low blood pressure, slow pulse, slow, shallow respiration, the peripheral stasis and cyanosis, the lowered muscular tone, etc.) rather than more direct evidence of an endocrinopathy, to which, however, the cardiovascular findings may possibly be attributed. That the phenomenon may be associated with lowered protein intake or absorption, or a result of renal stimulation, has been considered but seems unlikely, since in the study these factors have been controlled as far as practical.

The figures follow: —

Blood Urea Nitrogen (Milligrams per 100 Cubic Centimeters.)

| Patient A. | | | Patient B. | | | Normals. |
|------------|------|------|------------|------|------|----------|
| June 22 | 11.7 | | | | | 10.1 |
| 23 | 10.9 | | | | | 12.3 |
| 25 | 5.0* | 5.0 | June 25 | 14.0 | 15.2 | 2.5 |
| 29 | 4.2 | 5.0 | 28 | 10.4 | | 9.65 |
| July 3 | 5.6* | | July 3 | 4.5* | | 19.27 |
| 7 | 5.0* | 4.5 | 10 | 5.6* | | 14.0 |
| 10 | 4.5* | | 12 | 7.3* | | 11.2 |
| 15 | 5.6* | 5.6 | 15 | 5.6* | | 9.5 |
| 17 | 7.3* | 7.3 | 18 | 7.3* | 5.4 | 11.2 |
| 25 | 8.4* | | 21 | 5.0* | 7.3 | 12.3 |
| 31 | 12.3 | 11.2 | 31 | 8.7* | | 14.0 |
| Aug. 2 | 7.3* | 7.3 | | | 8.4 | 15.7 |
| 5 | 5.6* | | Aug. 4 | 9.2 | 10.6 | 12.3 |
| 5 | 9.0* | | 10 | 10.6 | | 9.5 |
| 9 | 9.0* | | | | | 14.6 |
| 10 | 7.3* | | | | | 12.9 |
| 18 | 5.0* | | | | | 9.0 |
| 20 | 10.9 | | | | | 11.2 |
| 26 | 12.0 | | | | | 13.4 |
| Sept. 4 | 14.6 | 15.7 | Sept. 7 | 12.3 | | |
| 6 | 8.4 | | | | | |
| 10 | 10.1 | | | | | |
| 13 | 11.2 | | 13 | 11.2 | | |
| 20 | 9.0 | 9.5 | | | | |
| Oct. 7 | 10.1 | 9.5 | Oct. 7 | 12.3 | | |
| 18 | 12.0 | 12.0 | 10 | 11.2 | | |

* In catatonia.

Blood Urea Nitrogen (Milligrams per 100 Cubic Centimeters) — Concluded.

| Patient A. | | | | Patient B. | | | | Normals. |
|------------|------|-----|--|------------|------|------|--|----------|
| Oct. 23 | 10.1 | 9.0 | | Oct. 18 | 9.5 | | | |
| 25 | 11.2 | | | | | | | |
| 27 | 10.6 | | | 26 | 12.9 | | | |
| 30 | 15.7 | | | | | | | |
| 31 | 12.9 | | | | | | | |
| Nov. 3 | 7.8* | | | | | | | |
| 12 | 9.5* | | | Nov. 14 | 16.8 | | | |
| 20 | 15.0 | | | | | | | |
| 27 | 14.0 | | | | | | | |
| 30 | 12.3 | | | | | | | |
| Dec. 2 | 16.2 | | | Dec. 2 | 14.0 | | | |
| 15 | 11.2 | | | 8 | 13.4 | | | |
| Jan. 5 | 12.8 | | | Jan. 20 | 14.5 | | | |
| 18 | 12.3 | | | Feb. 4 | 16.2 | | | |
| Feb. 5 | 15.7 | | | | | | | |
| 20 | 14.0 | | | | | | | |
| Mar. | | | | Mar. 15 | 14.6 | 15.1 | | |

* In catatonia.

Other Patients.

| | | | |
|------------|------|----|------|
| C. June 22 | 12.7 | F. | 4.5* |
| July 9 | 7.8* | | 10.6 |
| 14 | 5.6* | G. | 7.8* |
| 21 | 7.8* | | 8.1* |
| 22 | 10.0 | H. | 10.6 |
| 23 | 9.5 | | 6.4* |
| 25 | 11.2 | I. | 5.6* |
| D. | 6.7* | | 6.2* |
| E. | 4.5* | J. | 5.6* |
| | 5.6* | | 8.4 |
| | 8.4* | K. | 7.3* |
| | 9.2 | | 7.8* |
| | | | 6.2* |

* In catatonia.

NOTES ON THE EFFECT OF INTRAVENOUS DIARSENOL.*

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I. THE EFFECT ON RED CELL FRAGILITY.

It has been reported by several observers that administration of arsenic by mouth in different types of anæmia has resulted in a distinct increase in the resistance of the red corpuscles to hypotonic salt solution. Gunn, in 1908, observed that the immersion of red cells for an hour in a 1:10,000 solution of arsenious acid increased the resistance of the cells to hypotonic saline and also showed later that the increased resistance conferred by arsenical substances was operative against hemolysis by hemolytic chemical substances. Hill was able to demonstrate the antihemolytic action of arsenic in chemical tests. In a case of "pernicious anæmia," administration of Fowler's solution for ten days in increasing doses distinctly increased the resistance of the red cells to hemolysis by hypotonic salt solution. Before treatment, the beginning of hemolysis occurred in .475 per cent saline and complete hemolysis took place at .325 per cent, whereas the corresponding strengths of solution causing hemolysis after treatment were .450 and .275 per cent.

Similar studies have been made with the organic arsenical compounds, salvarsan and neosalvarsan. It has been found that *in vitro*, the presence of salvarsan delays hemolysis. In a very small number of clinical cases, red cell fragility has been determined before and after injection of salvarsan (.3 gram intravenously) and no change in the zone of hemolysis could be made out. In the treatment of a few cases of the Addison-Biermer type of hemolytic anæmia, however, the resistance of the red cells to hypotonic salt solution was definitely increased by intravenous salvarsan therapy. Whether the decreased fragility is due to an increase in the resistance of the existing red cells or due to stimulation of the bone marrow and production of young red cells which, according to Snapper and others, are more resistant, is not at once apparent. The leucocytosis noted after

* From the Foxborough State Hospital, Foxborough, Mass.

intravenous salvarsan treatment may be some evidence in favor of the latter possibility.

During the diarsenol treatment of cases of general paresis in the hospital here, a study of the red cell fragility was made on the blood of these patients. Determinations of the zone of hemolysis were made on the blood before intravenous treatment and at intervals afterwards. It must be borne in mind that the blood of these patients was essentially normal in so far as nothing of note in the cytology, hemoglobin content or blood counts was found. For this reason, one might be inclined to expect no change in the fragility determinations following the introduction of diarsenol into the blood stream.

The dose of diarsenol used in each instance was .5 to .6 gram (8 to 9 grains), representing .15 to .18 gram (2.4 to 2.7 grains) elemental arsenic, a considerable amount of arsenic were it not for the fact that it is in organic combination and 50 to 75 per cent of the diarsenol is promptly excreted unchanged. The further excretion of arsenic into the urine in some other form (as yet undetermined) and the rapid decrease in the amount found in the blood plasma gives but a limited opportunity for the arsenic to act upon the red cells, although it seems established that arsenic is found in the red corpuscles for some time after the plasma is free from it. The figures are given in Table I:—

Table I.

| CASE. | | | | | | | | | | Zone of Hemolysis before Treatment (Per Cent). | Time after Treatment. | Zone of Hemolysis after Treatment (Per Cent). |
|-------|---|---|---|---|---|---|---|---|---|--|-----------------------|---|
| 1, | . | . | . | . | . | . | . | . | . | 0.44-0.31 | 5 minutes | 0.43-0.28 |
| 2, | . | . | . | . | . | . | . | . | . | 0.42-0.27 | 5 minutes | 0.44-0.29 |
| 3, | . | . | . | . | . | . | . | . | . | 0.46-0.30 | 5 minutes | 0.46-0.30 |
| 4, | . | . | . | . | . | . | . | . | . | 0.42-0.30 | 5 minutes | 0.44-0.30 |
| 5, | . | . | . | . | . | . | . | . | . | 0.42-0.32 | 5 minutes | 0.44-0.31 |
| 6, | . | . | . | . | . | . | . | . | . | 0.42-0.28 | 10 minutes | 0.43-0.30 |
| 7, | . | . | . | . | . | . | . | . | . | 0.40-0.28 | 10 minutes | 0.40-0.29 |
| 8, | . | . | . | . | . | . | . | . | . | 0.42-0.31 | 10 minutes | 0.43-0.31 |
| 9, | . | . | . | . | . | . | . | . | . | 0.44-0.34 | 30 minutes | 0.44-0.34 |
| 10, | . | . | . | . | . | . | . | . | . | 0.44-0.32 | 30 minutes | 0.43-0.32 |
| 11, | . | . | . | . | . | . | . | . | . | 0.44-0.33 | 30 minutes | 0.44-0.33 |
| 12, | . | . | . | . | . | . | . | . | . | 0.45-0.29 | 1 hour | 0.46-0.30 |
| 13, | . | . | . | . | . | . | . | . | . | 0.46-0.32 | 1 hour | 0.45-0.33 |
| 14, | . | . | . | . | . | . | . | . | . | 0.44-0.33 | 1 hour | 0.44-0.33 |
| 15, | . | . | . | . | . | . | . | . | . | 0.46-0.33 | 1 hour | 0.45-0.33 |
| 16, | . | . | . | . | . | . | . | . | . | 0.45-0.28 | 3 hours | 0.45-0.30 |
| 17, | . | . | . | . | . | . | . | . | . | 0.44-0.31 | 3 hours | 0.45-0.32 |
| 18, | . | . | . | . | . | . | . | . | . | 0.46-0.33 | 24 hours | 0.45-0.34 |
| 19, | . | . | . | . | . | . | . | . | . | 0.44-0.31 | 24 hours | 0.45-0.33 |

It seems quite evident from these figures that the fragility of normal red cells is not altered by diarsenol introduced directly

into the blood stream. Such a conclusion, however, does not warrant a statement that in the abnormal blood conditions, such as the hemolytic anæmias, the introduction of arsenical compounds into the blood stream does not increase the resistance of the red cells.

II. THE EFFECT ON BLOOD UREA NITROGEN.

It is known that the administration of arsenic in inorganic form, as long as the substance does not interfere with digestion or absorption, increases the excretion of nitrogen, the total nitrogen of the urine being increased, especially the urea and ammonia fractions. Presumably this is caused by a mutual interaction of several factors, including capillary dilatation, a direct action on the body cells, and an action upon the gastrointestinal tract and kidneys. Weiske, however, has noted a decrease in nitrogenous excretion and especially in the amount of nitrogen in the stool, and it has been maintained that the improvement in nutrition following the administration of arsenic is due to more complete utilization of nitrogen by the digestive tract and a decreased decomposition of protein by the tissues. The variations in the elimination of nitrogen, however, vary within narrow limits and possibly are not related to the action of arsenic at all. The substance disappears rapidly from the blood, being excreted or taken up by the tissues, presumably forming firm compounds with the nucleins.

Not much literature is available dealing with the effects of salvarsan or diarsenol upon metabolism. During the treatment of cases of general paresis here with intravenous diarsenol, a few observations were made upon the blood urea nitrogen values and their behavior in relation to the introduction of the organic arsenic. As commented on in the note on red cell fragility, the diarsenol given intravenously disappears rapidly from the blood stream, the greater part of it being excreted promptly. And since the balance is in organic form or probably combined with the nucleins or other body substances, the amount of arsenic available to influence metabolism must be small.

The plan followed was to draw the blood just before giving the intravenous diarsenol, *i.e.*, secure a sample of blood from a needle already in place for the intravenous therapy, and then to secure samples at intervals after the injection, one hour, three hours, and twenty-four hours after treatment. The determinations were made by the Marshall urease method, using the aëration

and titration procedure. Each determination was made on 5 cubic centimeters of blood.

Control of the various factors influencing the blood urea values, even the fairly well-understood factors, is difficult. The influence of diet, water intake, and other features in the day's routine calls for consideration and should be controlled in order that any variations in the urea nitrogen values ascribed to the dye may be appraised with more accuracy. Accordingly, patients were given the diarsenol before breakfast, the control blood having been taken previously. On different occasions, blood was again drawn at the end of one hour, three hours, and twenty-four hours after administration, the patient having taken no food or water during the short intervals. The close approximations of the blood urea nitrogen values on the same individuals on blood drawn before breakfast at intervals of several days, when there is little or no kidney impairment, the individual remaining, of course, on a similar diet and routine, is well known. So the values obtained twenty-four hours after the diarsenol administration are relatively uninfluenced by the diet of the previous day, the blood being again drawn before breakfast.

The blood urea nitrogen values will be dependent in part on the functional efficiency of the kidneys. And the influence of diarsenol upon these values will probably vary then with the kidney function. If the diarsenol acts in any way as a renal irritant, it may be expected that the urea excretion will be accentuated in the presence of kidneys which will respond readily to the irritation. Still, our knowledge of the action of arsenical compounds upon metabolism is as yet inadequate to allow us to be sure that such action does not alter the nitrogenous substances of the blood quite independently of any renal action. The rate of phenolsulphonaphthalin excretion was ascertained in most of the cases here and it can be said that, in this group of patients, the decrease or increase in blood urea nitrogen following the use of diarsenol does not seem to bear any relationship to the dye elimination. The figures are shown in Table II.

In the group of cases noted in Table II, it will be seen that the introduction of diarsenol into the blood stream affects the urea values but little, if any. The variations are within normal range. It is true that there is a slight majority of the cases which showed a drop rather than a rise in values during the first few hours after the injection. But the drop is not conclusive, surely not as striking as the drop in blood urea nitrogen noted in catatonia and reported in another connection.

Table II.

| CASE. | Blood Urea
Nitrogen before
Treatment
(Milligrams
per 100
Cubic Centi-
meters). | Time after
Treatment. | Blood Urea
Nitrogen after
Treatment
(Milligrams
per 100
Cubic Centi-
meters). |
|---------------|--|--------------------------|---|
| 1, | 12.9 | 1 hour | 11.8 |
| 2, | 7.8 | 1 hour | 8.4 |
| 3, | 10.1 | 1 hour | 7.8 |
| 4, | 8.4 | 1 hour | 9.5 |
| 5, | 11.2 | 1 hour | 10.1 |
| 6, | 8.9 | 1 hour | 7.8 |
| 7, | 13.1 | 1 hour | 15.6 |
| 8, | 15.4 | 1 hour | 18.5 |
| 9, | 10.1 | 1 hour | 13.1 |
| 10, | 17.6 | 3 hours | 16.0 |
| 11, | 15.4 | 3 hours | 16.5 |
| 12, | 9.2 | 3 hours | 8.4 |
| 13, | 11.7 | 3 hours | 9.2 |
| 14, | 14.0 | 3 hours | 13.4 |
| 15, | 12.3 | 3 hours | 11.7 |
| 16, | 13.2 | 24 hours | 11.2 |
| 17, | 14.0 | 24 hours | 13.7 |
| 18, | 8.7 | 24 hours | 10.1 |
| 19, | 16.0 | 24 hours | 15.4 |
| 20, | 9.6 | 24 hours | 11.2 |

III. THE EFFECT ON KIDNEY FUNCTION.

The danger attending the use of salvarsan or diarsenol therapy in cases of nephritis of a nonsyphilitic character is definite. It is known that most of the diarsenol is rapidly excreted from the blood into the urine, at least when the functional efficiency of the kidneys is good. The drug remaining in the body apparently combines with the nucleins. It is not clear whether the adverse action in nephritis is due to direct action on the kidneys by the circulating drug and the attendant attempt at its excretion or is less direct. Since in such cases the excretory function of the kidneys is depressed, it may mean that only a small portion of the diarsenol is excreted as such, leaving the greater part in the body where it is gradually altered in character or combined with the cell proteins; or the portion in circulation may yield arsenical

substances which compromise more completely a deficient kidney function. The relationship of kidney function and the excretion of such substances as salvarsan has been but incompletely investigated. The fact that salvarsan is a dye substance and that we judge kidney function in part by the rate of elimination of easily demonstrable dye substances such as phenolsulphonaphthalin, does suggest that in depressed kidney function there is an unusual retention of diarsenol after its use, which may account for the difficulties seen in cases of nephritis in which it is used, rather than a direct action of the drug on the kidneys.

The observations made here throw no light on this feature, for the diarsenol in the urine was not followed. The point of interest was to learn whether, after the use of considerable amounts of diarsenol, there could be demonstrated evidences of renal insufficiency which could be ascribed to the drug itself. The number of cases for study was small and for that reason warrants no generalization. But it is reasonable to expect that in cases which have received many treatments of diarsenol over a long period there should be some evidence of nephritic impairment if diarsenol itself is a kidney irritant of any severity. It is well recognized that kidney impairment is distinct in late stages of neurosyphilis and the kidney insufficiency seen in cases of general paresis which have been actively treated with salvarsan, for example, should not be ascribed to the therapy unless we can conclude that the degree or frequency of impaired excretory function is greater in treated than in untreated cases of neurosyphilis. If organic arsenical compounds are excreted without special irritation to the kidney, we can expect the renal function to be but little altered even after many injections. It seems likely, too, that the untoward effects of organic arsenical compounds in cases of nonspecific nephritis is due more to the breakdown of the compound in the body, the kidneys possibly failing to eliminate this dye as they also fail to excrete phenolsulphonaphthalin, than to direct renal action. That the renal phenomena may be due to the results of the breakdown must be granted.

The rate of elimination of phenolsulphonaphthalin, the blood urea nitrogen, blood pressure and urine analysis were done on a small group of cases that had received a considerable amount of diarsenol treatment. The doses had ranged from .3 to .6 gram.

The figures for this group are given in Table III: —

Table III.

| CASE. | Diarsenol
(Grams). | Dye (Per
Cent). | Blood
Urea Ni-
trogen
(Mil-
ligrams). | Blood
Pressure. | URINE. | | |
|---------|-----------------------|--------------------|---|--------------------|----------------------|----------|-------------|
| | | | | | Specific
Gravity. | Albumen. | Casts. |
| G. B.,* | 19.6 | 20 | 8.9
7.8 | 120-85 | 1.014 | s. t. | Hyal. Gran. |
| E. L.,* | 24.9 | 10 | 18.5 | 102-70 | 1.009 | 0 | Occ. Hyal. |
| J. M., | 16.0 | 60 | 10.1
13.1 | 120-85 | 1.010-18 | 0 | 0 |
| F. H., | 29.6 | 60 | 15.6
13.1 | 115-70 | 1.024 | s. p. t. | Gran. |
| M. J., | 26.5 | 45 | 11.0
9.5 | 118-65
155-70 | 1.010 | 0 | 0 |
| J. J., | 15.6 | 40 | 15.2 | 124-80 | 1.030 | 0 | 0 |
| R. D., | 11.0 | 35 | 12.4 | 110-70 | 1.025 | v. s. t. | Gran. |
| C. D., | 32.0 | 60 | 8.4
11.2 | 115-80 | 1.010 | 0 | 0 |
| H. F., | 12.5 | 30 | 15.4 | 152-85 | 1.018 | s. p. t. | Gran. |
| M. C., | 17.5 | 50 | 13.4 | 115-80 | 1.016 | 0 | 0 |

* In bed, showed considerable edema, general condition poor.

It will be noted that several of the above patients had received a good deal of diarsenol and so far as clinical pathology shows, their kidney function remains good. We have had a much larger group of cases under treatment, and similar studies on them fail to demonstrate that diarsenol has a deleterious effect on the kidneys when their function is good at the outset.

BLOOD PLASMA CHLORIDES v. RENAL FUNCTION.

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The significance of the chloride content of the blood is imperfectly understood. Widal, Ambard and their associates, and, more recently, McLean at the Rockefeller Hospital, have brought out several interesting features of this problem. The threshold for excretion of sodium chloride, *i.e.*, the concentration of sodium chloride in the blood plasma necessary to start excretion of the salt into the urine, is fairly constant at about 562 milligrams per 100 cubic centimeters of plasma. When the concentration of sodium chloride in the plasma falls below this threshold value, excretion of chloride practically ceases. The threshold of sodium chloride secretion is not fixed but varies in health and is much influenced by the administration of drugs and by disease processes. It can be considered to represent a regulatory mechanism for the maintenance of a fairly constant composition of the blood. In this respect, it resembles the mechanism in regard to water and sugar excretion and differs from the excretion of nitrogenous substances, which have no threshold value below which excretion does not take place. From the relationships of plasma and urine chlorides to this threshold, Ambard, Chabanier and Onell have developed their work on the sodium chloride-secretion-constant.

In dropsical renal disease, the secretion threshold is elevated and points to a lowered ability of the kidneys to excrete sodium chloride. On the other hand, the slight retention frequently seen in the nephropathies may be quite independent of any defect in the sodium chloride elimination. Because of the variation seen in health and in disease, calculation of the threshold value for clinical purposes, in an endeavor to secure the sodium chloride permeability of the kidneys, is of little value in the presence of mild degrees of retention. It is early in disease processes that we wish to secure evidence of impaired function — at a stage when something can be done therapeutically — and it is because of the features mentioned above that the threshold studies of sodium chloride give us but little aid in early recognition of decreased renal excretion.

That there is some degree of selective excretion by the kidneys seems established. In some cases, urea excretion may be normal while that of uric acid may be definitely impaired. The same selective excretion probably pertains to sodium chloride also. Evidence pointing in that direction may be noted in the "concentration" and "dilution experiments" worked out by Hefter and Siebeck, the "fixation of specific gravity" studies reported by Hedinger and Schlager and the extensive studies on excretory response to varying diets as worked out by Mosenthal and others.

McLean has summarized our information relative to the problem as follows: —

1. The normal and usual range of concentration of blood plasma chloride is from 562 to 625 milligrams per 100 cubic centimeters of plasma or higher, according to the amount ingested. On the excess over 562 milligrams per 100 cubic centimeters of plasma depends the rate of excretion.

2. There is a relative increased concentration in certain cardiac and renal diseases.

3. Under certain conditions, notably fevers and diabetes, or by the action of diuretics or heart tonics, the chloride threshold may be temporarily or permanently lowered.

4. Failure to excrete chlorides in pneumonia is associated with a lowered concentration of chlorides in the plasma.

5. Edema is usually accompanied by a relatively increased concentration of chlorides in the plasma.

6. Chlorides and urea functions are quite independent of each other.

Most of the work in the blood chlorides has been done on young, healthy adults without evidence of renal disease or on patients suffering from active diseases, acute or chronic. During studies on renal functions here, determination of the plasma chloride values was made by a method described recently.¹ These values were compared with the elimination of phenol-sulphonaphthalin, the blood urea findings, the blood-pressure readings and the urine specific gravity. Other features of the urine analyses were disregarded (there were no cases of glycosuria in the group), for in the type of patient studied, no value can be ascribed to the findings of albuminuria and cylindruria. The cases studied in this connection were active institutional cases, all were workers in the industrial rooms, wards or on the farm, none of them (unless noted) showed any edema, cyanosis,

dyspnœa, or other features which are known to compromise excretory rate. The ages of the patients varied from forty to eighty-five years, the majority were over fifty. None of them were taking drugs of any kind. The blood in every instance was drawn before breakfast, some twelve hours after the preceding meal. The urea determinations were made by the Marshall urease method, the aëration and titration procedure being employed. Determinations of plasma chlorides were made on 5 cubic centimeters of plasma, the urea analyses on 5 cubic centimeters of citrated blood. The phenolsulphonaphthalin test of Rountree and Geraghty was done in the usual manner. The blood-pressure values represent the variations from time to time over a period of months, some are the mean of numerous readings.

Table I gives the figures in a group so studied:—

Table I.

| NUMBER. | Plasma Chloride (Milligrams per 100 Cubic Centimeters). | Phthalin (Per Cent). | Blood Urea Nitrogen. | Blood Pressure. | Urine Specific Gravity. |
|--------------|---|----------------------|----------------------|-----------------|-------------------------|
| 1, | 594 | 60 | 8.4 | 140-95 | 1030 |
| 2, | 512 | 15 | 23.3 | 120-60 | 1024 |
| | | | 29.9 | 165-55 | |
| 3, | 560 | 30 | 10.1 | 180-95 | 1022 |
| | | | 14.0 | 210-80 | |
| 4, | 570 | 40 | 12.8 | 185-85 | 1012-22 |
| | | | | 230-90 | |
| 5, | 570 | 50 | 13.4 | 165-105 | 1019-22 |
| | | | 13.7 | 190-110 | |
| 6, | 550 | 65 | 13.4 | 175-105 | 1024 |
| | 534 | | | 130-90 | |
| 7, | 546 | 60 | 19.0 | 125-75 | 1020 |
| | | | 21.8 | 155-90 | |
| | | | 17.4 | | |
| 8, | 618 | 55 | 13.4 | 190-94 | 1014 |
| | | | 15.1 | 210-85 | |
| | | | 9.2 | | |
| 9, | 662 | 60 | 22.4 | 165-85 | 1012-24 |
| | | 35 | 15.4 | 180-95 | |

Table I — Continued.

| NUMBER. | Plasma Chloride
(Milli-grams per
100 Cu-
bic Centi-
meters). | Phthalin
(Per Cent). | Blood Urea
Nitrogen. | Blood
Pressure. | Urine
Specific
Gravity. |
|---------------|--|-------------------------|-------------------------|--------------------|-------------------------------|
| 10, | 570 | 35 | 17.3 | 165-95 | 1010 |
| | | 55 | | 170-95 | |
| 11, | 570 | 50 | 16.0 | 160-100 | 1014 |
| | 572 | | 15.4 | | |
| 12, | 570 | 30 | 12.2 | 135-90 | 1010-30 |
| 13, | 560 | 40 | 9.5 | 140-90 | 1010 |
| | | | 16.2 | 175-90 | |
| 14, | 554 | 40 | 16.8 | 120-60 | 1002-10 |
| 15, | 603 | 40 | 15.4 | 130-85 | 1020 |
| 16, | 566 | 30 | 19.6 | 130-80 | 1012 |
| | | 15 | | | |
| 17, | 590 | 35 | 18.5 | 130-90 | 1030 |
| | | | 19.9 | | |
| 18, | 590 | 35 | 10.1 | 150-85 | 1026 |
| 19, | 554 | 40 | 18.5 | 155-85 | 1025 |
| | | 30 | 8.4 | 135-90 | |
| 20, | 558 | 50 | 9.5 | 180-100 | 1012 |
| | | | 12.3 | 210-110 | |
| 21, | 542 | 5 | 24.4 | 150-90 | 1021 |
| | | 10 | | 160-95 | |
| 22, | 562 | 70* | 17.9 | 160-80 | 1013-22 |
| | | 55† | 15.7 | 210-90 | |
| | | 40‡ | | | |
| 23, | 572 | 35 | 10.6 | 185-120 | 1022 |
| | 578 | | 13.4 | 190-110 | |
| 24, | 580 | 35* | 9.5 | 150-95 | 1020 |
| | | 50† | 13.7 | 180-100 | |
| | | 70† | 14.6 | | |
| 25, | 572 | 5 | 15.7 | 190-130 | 1015-30 |
| | | 5 | | 150-100 | |
| 26, | 572 | 30 | 16.5 | 170-115 | 1006-12 |
| 27, | 540 | 40 | 15.4 | 170-95 | 1028 |
| | | | 19.0 | 180-100 | |

* 1917.

† 1918.

‡ 1919.

Table I — Continued.

| NUMBER. | Plasma
Chloride
(Milli-
grams per
100 Cu-
bic Centi-
meters). | Phthalin
(Per Cent). | Blood Urea
Nitrogen. | Blood
Pressure. | Urine
Specific
Gravity. |
|---------------|---|-------------------------|-------------------------|--------------------|-------------------------------|
| 28, | 572 | 40 | 12.0 | 150-100 | 1018 |
| 29, | 510 | 45 | 12.9 | 200-120 | 1020 |
| | 522 | | 13.4 | | |
| 30, | 498 | 25 | 19.6 | 160-105 | 1016 |
| | | | 18.5 | 170-110 | |
| 31, | 570 | 25 | 11.2 | 160-90 | 1015 |
| | | 35 | | 175-95 | |
| 32, | 560 | 30 | 11.8 | 125-75 | 1020 |
| | | | | 170-100 | |
| 33, | 522 | 10 | 17.4 | 145-90 | 1025 |
| | | 5 | | | |
| 34, | 520 | 40 | 17.6 | 170-80 | 1012-35 |
| | | | 17.6 | | |
| 35, | 730 ? | 45 | 15.1 | 150-85 | 1020 |
| | | | 11.7 | 180-90 | |
| 36, | 596 | 25 | 10.1 | 120-85 | 1025 |
| | 522 | | 11.2 | 170-110 | |
| | | | 15.2 | | |
| 37, | 542 | 60 | 11.2 | 135-80 | 1024 |
| | | | 15.9 | 120-80 | |
| 38, | 536 | 50 | 14.5 | 45-95 | 1020 |
| | | | 14.0 | 165-110 | |
| 39, | 590 | 45 | 12.9 | 160-110 | 1028 |
| 40, | 570 | 10 | 21.3 | 165-110 | 1012-20 |
| 41, | 596 | 15 | 11.2 | 150-120 | 1012-22 |
| | | | | 190-130 | |
| 42, | 580 | 30 | 22.9 | 150-95 | 1012-20 |
| | | | 23.5 | | |
| 43, | 658 | 55 | 14.0 | 175-95 | 1020-28 |
| 44, | 590 | 40 | 10.6 | 150-100 | 1025-30 |
| | | 55 | 11.8 | 180-100 | |
| 45, | 514 | 50 | 7.2 | 185-85 | 1030 |
| 46, | 558 | 50* | 10.1 | 200-110 | 1028 |
| | | 20† | 12.3 | 190-105 | |
| 47, | 566 | 40 | 6.7 | 170-90 | 1008-18 |

* 1917.

† 1918.

Table I — Continued.

| NUMBER. | Plasma
Chloride
(Milli-
grams per
100 Cu-
bic Centi-
meters). | Phthalin
(Per Cent). | Blood Urea
Nitrogen. | Blood
Pressure. | Urine
Specific
Gravity. |
|---------------|---|-------------------------|-------------------------|------------------------------|-------------------------------|
| 48, | 630 | 40†
30‡ | 14.0 | 145-85 | 1010-20 |
| 49, | 558 | 45 | 11.2 | 185-80 | 1010-14 |
| 50, | 558 | 65 | 9.2
10.1 | 170-100
240-90 | 1016-18 |
| 51, | 610 | 40 | 7.3 | 180-60 | 1008 |
| 52, | 560 | 50 | 12.3 | 160-65
220-90 | 1008-20 |
| 53, | 530 | 60 | 12.4 | 165-85 | 1016 |
| 54, | 566 | 25 | 7.3 | 170-100 | 1004-40 |
| 55, | 546 | 45*
15† | 18.4 | 210-130 | 1002-15 |
| 56, | 610
612 | 40
10 | 11.7 | 220-140 | 1010 |
| 57, | 606 | 45 | 12.4 | 135-85 | 1012-22 |
| 58, | 620 | 55 | 12.3 | 210-140
250-70 | 1032 |
| 59, | 672
540 | 60
40 | 15.4
13.2 | 160-85
200-110 | 1004-10 |
| 60, | 620 | 65 | 12.3
10.1
12.8 | 180-90
220-105
210-130 | 1022-24 |
| 61, | 558 | 40 | 7.6 | 125-95 | 1012 |
| 62, | 575 | 50 | 11.4 | 135-90 | 1016 |
| 63, | 602 | 35 | 14.4 | 230-120 | 1010-14 |
| 64, | 638 | 15 | 8.4 | 190-110 | 1020-23 |
| 65, | 670
576 | 40 | 14.6 | 260-120 | 1024 |
| 66, | 594 | 60 | 14.2 | 145-95 | 1030-31 |
| 67, | 560 | 55 | 9.4 | 155-80 | 1014 |
| 68, | 602 | 30 | 18.3 | 175-90 | 1010-14 |
| 69, | 578 | 15 | 17.5 | 150-75 | 1020-24 |
| 70, | 590
594 | 35 | 8.6
13.4 | 125-70 | 1030 |

* 1917.

† 1918.

‡ 1919.

Table I — Continued.

| NUMBER. | Plasma
Chloride
(Milli-
grams per
100 Cu-
bic Centi-
meters). | Phthalin
(Per Cent). | Blood Urea
Nitrogen. | Blood
Pressure. | Urine
Specific
Gravity. |
|----------------|---|-------------------------|-------------------------|--------------------|-------------------------------|
| 71, | 566 | 40 | 17.6 | 170-110 | 1015-35 |
| 72, | 586 | 50 | 10.3 | 115-75 | 1022-30 |
| 73, | 586 | 30 | 16.8 | 180-115 | 1008-22 |
| 74, | 578 | 70 | 14.3 | 200-140 | 1016-30 |
| | | | 16.5 | 210-120 | |
| 75, | 562 | 25 | 15.4 | 130-70 | 1022 |
| | | | 15.9 | | |
| 76, | 590 | 30 | 13.4 | 150-90 | 1002-24 |
| 77, | 550 | 45 | — | 155-90 | 1020 |
| 78, | 646 | 40 | 18.2 | 120-70 | 1024-30 |
| 79, | 586 | 45 | 16.4 | 130-75 | 1032 |
| 80, | 566 | 28 | 18.5 | 140-75 | 1020 |
| | | 25 | | | |
| 81, | 708 | 15 | 23.6 | 230-100 | 1018-0 |
| | 708 | | 22.2 | | |
| 82, | 520 | 40 | 17.6 | 170-80 | 1012-35 |
| | | | 17.6 | | |
| 83, | 540 | — | 14.3 | 180-100 | 1020 |
| 84, | 658 | 55 | 9.2 | 145-85 | 1017-26 |
| 85, | 570 | 25 | 25.2 | 200-85 | 1020 |
| 86, | 558 | 40 | — | 120-78 | 1010-18 |
| 87, | 578 | 60 | — | 220-110 | 1030 |
| 88, | 558 | 40 | — | 155-75 | 1020 |
| 89, | 586 | 25 | — | 138-85 | 1012-22 |
| 90, | 590 | 35 | — | 195-110 | 1010-18 |
| 91, | 540 | 40 | — | 185-70 | 1030-32 |
| 92, | 594 | 25 | — | 170-100 | 1008-14 |
| 93, | 590 | 50 | — | 145-85 | 1020 |
| 94, | 558 | 35 | — | 140-100 | 1020 |
| 95, | 560 | 65 | — | 140-85 | 1024 |
| 96, | 588 | 50 | — | 105-65 | 1010 |
| 97, | 606 | 40 | — | 140-85 | 1012-26 |
| 98, | 550 | 45 | — | 210-110 | 1020-22 |
| 99, | 526 | 25 | — | 172-85 | 1012-20 |
| 100, | 594 | 50 | — | 135-55 | 1024 |

Table I — Concluded.

| NUMBER. | Plasma Chloride (Milligrams per 100 Cubic Centimeters). | Phthalin (Per Cent). | Blood Urea Nitrogen. | Blood Pressure. | Urine Specific Gravity. |
|----------------|---|----------------------|----------------------|-----------------|-------------------------|
| 101, | 582 | 25 | — | 120-85 | 1021-24 |
| 102, | 566 | 70 | — | 155-100 | 1026 |
| 103, | 554 | 30 | — | 160-95 | 1020 |
| 104, | 558 | 60 | — | 160-90 | 1070 |

Of the 104 cases enumerated in Table I, 40 showed plasma chloride values ranging from 554 to 575 milligrams per 100 cubic centimeters, there were 20 that showed values below 554 milligrams and the other 44 gave figures over 575 milligrams. An attempt to relate the values found with the other findings, *i.e.*, the blood urea nitrogen, rate of elimination of phenolsulphonaphthalin and blood-pressure readings, showed that of the cases showing a plasma chloride of 560 milligrams or less, 68 per cent of such cases had a red test of 40 per cent or higher, 60 per cent had a blood urea nitrogen of 16 milligrams or less and 34 per cent had a systolic blood pressure of 150 millimeters or less, while 26 per cent had a systolic reading of 180 millimeters or over. A review of similar findings in the whole group shows that 60 per cent of them showed a red test of 40 per cent or higher, 66 per cent had a blood urea nitrogen of 16 milligrams or less, 38 per cent had a systolic blood pressure of 150 millimeters or less, and 27 per cent had a pressure reading of 180 millimeters or higher. The close relative approximation of these two groups of figures does not permit one to draw a conclusion that the plasma chloride figures bear any relationship to the other features taken as evidence of renal function.

It must be borne in mind that the plasma chloride values depend in part on the alkaline reserve of the plasma, and, since the latter is quickly altered by exposure to air, the blood must be centrifuged promptly to minimize the alteration so produced, or drawn under oil to prevent the escape of carbon dioxide, consequent depression of bicarbonate in the plasma and resulting high chloride reading. In the group of cases studied here, the bicarbonate content of the plasma was not determined.

A second group of 40 cases was studied and the plasma chlorides of blood drawn twelve hours after the preceding meal were determined and compared with figures determined three to four hours after a regular meal. The values so found are given in Table II, together with the blood urea nitrogen, phenolsulphonaphthalin output, blood pressure and urine specific gravity. Eighty-five per cent of the cases showed a definite rise in plasma chlorides after the meal, but an attempt to correlate the rise with any feature of the renal function, as evidenced by the other findings enumerated, failed. In both series there was little tendency toward a low fixation of the specific gravity of the urine.

Table II.

| NUMBER. | Plasma Chloride
(before Break-
fast). | Plasma Chloride
(3 to 4
Hours after
Meal). | Phthalin
(Per Cent). | Blood
Urea Ni-
trogen. | Blood
Pressure. | Urine
Specific
Gravity. |
|---------------|---|---|-------------------------|------------------------------|--------------------|-------------------------------|
| 1, | 590 | 676 | 15 | 32.8 | 180-100 | |
| 2, | 564 | 642 | 50 | 10.4 | 215-100
160-70 | 1020-30 |
| 3, | 560 | 668 | 50 | 9.5 | 140-90 | 1012-18 |
| | 522 | | | 14.0 | 175-120 | |
| 4, | 594 | 730 | 55 | 13.2 | 160-120 | 1008-20 |
| 5, | 610 | 746 | 50 | 12.2 | 130-70 | 1012-30 |
| 6, | 620 | 660 | 45 | 16.0 | 130-60 | 1010-30 |
| 7, | 560 | 648 | 20 | 20.2 | 165-95 | 1018-22 |
| | | | | 21.3 | 180-85 | |
| 8, | 608 | 716 | 45 | 17.0 | 135-90 | 1010-28 |
| 9, | 554 | 610 | 55 | 7.3 | 140-70 | 1020-22 |
| 10, | 538 | 652 | 55 | 10.4 | 120-70 | 1004-14 |
| 11, | 554 | 530 | 10 | 7.6 | 155-90 | 1012-22 |
| 12, | 586 | 704 | 45 | 8.8 | 125-75 | 1010-12 |
| 13, | 560 | 644 | 30 | 16.3 | | |
| 14, | 570 | 584 | 40 | 10.6 | 160-90 | 1025-30 |
| 15, | 546 | 606 | 35 | 11.7 | 150-75 | 1004-20 |
| | | | 15 | 12.3 | 170-80 | |
| 16, | 608 | 600 | 15 | 18.6 | 170-100
140-95 | 1022-30 |
| 17, | 618 | 652 | 60 | 15.4 | 170-80 | 1008-30 |
| | | | | 15.6 | 210-120 | |
| | | | | 12.0 | 195-100 | |

Table II — Concluded.

| NUMBER. | Plasma
Chloride
(before
Break-
fast). | Plasma
Chloride
(3 to 4
Hours after
Meal). | Phthalin
(Per Cent). | Blood
Urea Ni-
trogen. | Blood
Pressure. | Urine
Specific
Gravity. |
|---------------|---|--|-------------------------|------------------------------|--------------------|-------------------------------|
| 18, | 600 | 642 | 40 | 13.4 | 170-95 | 1013-14 |
| | | 686 | | | 190-120 | |
| 19, | 590 | 634 | 65 | 6.2 | 125-70 | 1014 |
| 20, | 602 | 716 | 45 | 15.6 | 165-85 | 1078 |
| | | | | 11.5 | | |
| 21, | 570 | 572 | 35 | 8.4 | 130-65 | 1005-25 |
| 22, | 582 | 648 | 45 | 16.4 | 120-100 | 1032 |
| 23, | 582 | 660 | 15 | 26.4 | 170-120 | 1015-21 |
| | | | 5 | | | |
| 24, | 618 | 742 | 40 | 14.6 | 170-120 | 1030 |
| 25, | 590 | 684 | 45 | 12.9 | 155-110 | 1018-28 |
| 26, | 562 | 674 | 30 | 19.0 | 115-70 | 1020-30 |
| 27, | 616 | 584 | 15 | 18.4 | 160-90 | 1012-16 |
| 28, | 574 | 610 | 35 | 10.6 | 150-80 | 1010-20 |
| 29, | 578 | 660 | 55 | 6.7 | 205-85 | 1034 |
| 30, | 558 | 672 | 40 | 13.2 | 140-90 | 1020-22 |
| 31, | 604 | 636 | 50 | 10.6 | 160-75 | 1010-26 |
| 32, | 558 | 602 | 10 | 17.4 | 145-80 | 1028 |
| 33, | 560 | 584 | 45 | 12.4 | 130-85 | 1010-1 |
| 34, | 574 | 712 | - | - | 100-55 | 1010-20 |
| 35, | 562 | 570 | 70 | 8.4 | 135-75 | 1010-20 |
| 36, | 598 | 596 | 40 | 14.2 | 140-80 | 1014-16 |
| 37, | 578 | 714 | 40 | 8.4 | 120-80 | 1025-30 |
| 38, | 610 | 602 | 30 | - | 145-70 | 1020-28 |
| 39, | 580 | 608 | - | 16.8 | 160-100 | 1025 |
| | 576 | | | | 210-120 | |
| 40, | 616 | 584 | 15 | 22.4 | 180-100 | 1012-14 |

Attention was later turned to the so-called cases of essential vascular hypertension as seen in the out-patient clinics and wards of a general hospital. In these patients, no evidence of nitrogen retention or depressed phenolsulphonaphthalin output is obtained to suggest that the origin of the hypertension is failing excretory function. The group which has been studied is still too small to allow comment, but it seems quite probable

that many of these people have a high kidney threshold for salt in relation to their elevated blood pressure. Attempts to lower the threshold of excretion have been tried but they introduce new features, such as the effect of ingested alkali on the distribution of salt between plasma, red cells and tissues. In some cases, however, it is possible to secure a markedly increased salt output in the urine with a fall in plasma chlorides, but the mechanism is not entirely clear.

SUMMARY.

The blood plasma chlorides were determined in 104 patients showing no obvious evidence of compromising physical disease, the blood being drawn twelve hours after the preceding meal. The ages ranged from forty to eighty-five years. No relationship could be established between the chloride values and the blood urea nitrogen, rate of elimination of phenolsulphonaphthalin, blood-pressure readings or urine specific gravity.

In a second group of 40 cases, the plasma chlorides on fasting blood and blood drawn four hours after the preceding meal were determined. Although 85 per cent of the cases showed a definite and considerable rise after the meal, the rise would not be associated with any consistency with the parallel determinations enumerated above.

The small group of cases of so-called essential vascular hypertension studied seem to show an elevated renal threshold for sodium chloride. Attempts to lower the threshold have given no conclusive results.

REFERENCE.

1. RAPPLEYE, W. C.: "A Simple Application of the Volhard Principle for Blood Plasma Chlorides." *Jour. Bio. Chem.*, Vol. XXXV, No. 3, September, 1918.

CORRELATION OF DATA IN CASES SEEN AT THE PSYCHOPATHIC DEPARTMENT AND FOXBOROUGH STATE HOSPITAL.*

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Data have elsewhere been presented concerning the diagnosis in 419 cases seen at the Psychopathic Department of the Boston State Hospital and transferred to other institutions. At the present time, data are being compiled on about 700 more such cases, and the results will shortly be published. This, however, is the first opportunity I have had to make an intensive study of the diagnostic standards and opinions of a single institution as compared with those of the Psychopathic Department. It is important always to submit to a careful scrutiny of one individual the facts and interpretations of the facts applying to any group of cases, since in that way an adequate idea of differences in standards and in interpretations is most easily secured.

The Psychopathic Department stands in a peculiar position in this respect. Its records are continually being critically scrutinized by the medical staffs of other institutions, but not in a particularly systematized fashion, the result being that all too often errors of omission and commission are not brought to the attention of the staff at the Psychopathic Department, nor are reasons for differences in points of view analyzed. Hence, this opportunity to analyze the changes in diagnosis between these two institutions seems to me of particular importance.

The data are drawn from 231 cases observed at both institutions during the past seven years. These are all the cases which we could ascertain had been observed in both institutions. Of the entire group, 17 cases, or $7\frac{3}{10}$ per cent, received no diagnosis at the Psychopathic, though all except 2 received a definite diagnosis at Foxborough. Excluding these 17 cases, we find that the diagnoses agree in 165 cases, or 77 per cent, and vary in 48, with 1 case doubtful. This is precisely the percentage of agreement found in a previous study where all insti-

* Presented at the opening of the laboratory at Foxborough State Hospital, June 2, 1919.

tutions were combined. If we include the undiagnosed groups, which is hardly fair to the figures, we find 73 per cent of agreement.

In Table I are presented the data concerning agreement and disagreement in diagnosis according to groups. The doubtful case, shown in the table, is one called "alcoholic hallucinosis and general paresis" at the Psychopathic, and "general paresis with chronic alcoholism" at Foxborough.

This woman of fifty-seven had a long alcoholic history, marked auditory hallucinosis (voices threatening her, etc.), a depressed emotional tone and the physical and laboratory signs of paresis. By the time she was transferred to Foxborough, the hallucinosis had cleared up, and at the present time the patient is out of the institution on visit.

It is possible that the correct diagnosis is syphilitic paranoid state, a condition first described by Plaut and recently mentioned by Hoch in a criticism of one of my papers. I have seen 3 cases which almost certainly belong to this group, and another case of the same type is quoted further on in this paper. It is probable, however, in view of the excessive use of alcohol, that in this case we have a nonsymptomatic general paresis with an alcoholic psychosis added.

Table II presents all of the data in readily accessible form, showing for each group the total of the diagnoses made at the Psychopathic and how they were changed at Foxborough.

Certain of the apparent errors appear on analysis to represent merely verbal divagations, although in the majority of instances such verbal non-agreement represents an underlying basic difference in etiological conceptions. Thus the changes from manic depressive to involution melancholia (3 cases) represent, probably, a somewhat different standard of viewing the depressions of the involution period. In connection with this I have reviewed Dreyfus' "Analysis of Involution Cases," due to which the idea has spread that involution cases should all be classed as instances of manic-depressive psychosis, and I find that this analysis is not convincing. Too many cases died early in the course of the disease or terminated in dementia. It is probably true that the majority of the depressed cases of the involution period are of the manic-depressive type, but it is my belief that cases with hallucinations and marked delusion formation should be regarded as cases of manic-depressive only when the entire life history of the individual bears out such a conception.

Some of the changes which seem at first to be verbal changes probably represent cases in which different periods in the evolution of the mental state were seen and not sufficient weight was given to the preceding observations. Thus, in the changes in the group of the psychotic feeble-minded, in 3 cases a psychopathic diagnosis of "psychosis with feeble-mindedness" was changed to read "feeble-minded." In 2 cases the latter diagnosis either expresses the same idea as our "psychosis with feeble-mindedness," or else very real instances of psychotic conduct were given no weight in this final diagnosis. In a third case, called by us "feeble-minded with chronic alcoholic deterioration," and not regarded as insane, the matter is clearly one of terminology. Of course, if there is or seems to be a deteriorating process in a feeble-minded person, then the diagnosis is certainly phrased only with great difficulty. A change of the opposite type, in which we made a diagnosis of feeble-minded and raised the question of dementia præcox, is regarded at Foxborough as a case of "psychosis with feeble-mindedness," which is unquestionably correct, and, apparently, from their record, the psychosis is dementia præcox.

Of course, in the majority of groups the number of cases considered is too small to make any very accurate statistical evaluation. Possibly because of this small number of cases certain changes in diagnosis, which we have elsewhere found to be very common, occur very seldom in this series. Thus, changes from senile dementia to arteriosclerosis, and *vice versa*, are very rare. Of course these changes are most commonly due to variation in the evaluation of indirect evidence. From the study of autopsied cases, it is clear to me that our diagnoses in these groups are wrong with surprising frequency.

It appears that there are at least three types of changes in diagnosis. There is, first, an essentially verbal change, representing no real difference in diagnostic standards; second, a case where the evidence to be evaluated is found so indirect that variations in standard and incorrectness in interpretation are very common; third, the very important group in which the real evidence of divergent standards exists and calls for close study. Even here, unfortunately, it often occurs that a portion of the deviation is due to carelessness or improper interpretation; *i.e.*, an interpretation which is not justified by the facts at hand.

When such cases are excluded, there still remains an important series of cases for analysis. Of course, all too frequently, we

solve our puzzling problems on the basis of outcome, but it seems to me we should be very careful in applying this standard to diagnosis, since trusting too much in it will lead to carelessness in case study and in the more important phase of symptomatic diagnosis.

The best method of analyzing the changes and the reasons for them in the group of cases at hand is a rapid survey of the changes in the various groups.

DEMENTIA PRÆCOX.

In 6 cases the diagnosis was changed from dementia præcox to manic depressive. In 3 of these cases the record made while at the Psychopathic presents definite signs of schizophrenia, so that the diagnosis would seem to be symptomatically correct but not verified by longer observation and the outcome. In the fourth case, the Psychopathic record is not complete because of the difficulty of examination of the patient. The fifth was an excited case where the difficulties of differentiation are notorious; and the sixth very interesting case is here briefly quoted: —

A man of twenty-nine, admitted to the Psychopathic on March 13, 1917. Two brothers had previously been at the Psychopathic: one with a diagnosis of psychoneurosis, the other with a diagnosis of manic depressive insanity. The patient was sent in because he could not work for lack of concentration; noise of great machinery filled his head; his cap hurt his head. He had crying spells. The voices began crying in his head. After he read "Weltschmerz" his heart felt like a rose growing and blooming, then it began to fade and to fall away and the center burned like the sun itself. He talked rapidly, his face was bright, he seemed happy. He had written a drama, a very disconnected thing, called "The Rise and the Fall of Man." On examination he revealed a sex history of masturbation, homosexuality and promiscuity. He gave a symbolic interpretation of his rather vivid auditory and visual hallucinations. He had some poorly formed political concepts of very peculiar nature. His emotional tone was unstable, though emotionally depressed. At staff meeting his ideas were quite fantastic. The early hallucinations had disappeared. There was a possibility of previous attacks.

By exclusion we reached the diagnosis of dementia præcox. At Foxborough the provisional diagnosis was dementia præcox. He was regarded as showing "intellectual, affective and volitional

deterioration." The examination revealed much the same as at the Psychopathic. He became rather markedly depressed and then had a definite period of excitement, although the characteristics of the mania were not clearly those of manic depressive insanity. However, he improved and for a year has been out on visit, working and doing quite well. The confirmed diagnosis of manic depressive is, therefore, based on the seeming recovery. As symptomatic analysis at both institutions pointed to a schizophrenic process, it is necessary to point out that the present condition may be only a remission which we know to be fairly common in *præcox*. One valuable point brought out is that what we may call intellectual, affective and volitional deterioration are not always necessarily so. In not a few cases such deterioration is only apparent and is the result of an active disturbance in one or all of these fields.

In one case the diagnosis was changed from *præcox* to alcoholic hallucinosis, and our record makes no statement regarding the alcoholic history. The nature and content of the hallucinosis, together with the emotional reaction, is much more like alcoholic hallucinosis than *præcox*. It is quite important that we should not depend on the history of alcohol as the only means of differentiating between these two conditions. We may thus make more errors in diagnosis, but we shall also apply our attention to the relationship between symptoms in the various cases.

In the four cases, with change in diagnosis from dementia *præcox* to mental deficiency, it is worthy of note that none are changed to mental deficiency with psychosis.

Analysis of the Foxborough and Psychopathic records in these cases shows that in one case we are apparently dealing with mental deficiency or dementia simplex, a notoriously difficult differentiation in an adult. One case seems to be dementia *præcox* on a basis of feeble-mindedness; another has not been, from the history, feeble-minded, and I believe dementia *præcox* to be the correct diagnosis. The fourth very interesting case is quoted in some detail: —

This man of twenty-six was sent to the Psychopathic Hospital Feb. 18, 1919, from the municipal court. His father is a spiritualistic doctor. Patient had been in Boston for two weeks. He stole a coat at his place of employment and beneath it wore a lady's coat. At the Psychopathic he was quiet, rather sullen, suspicious, evasive, overbearing in manner, not very accessible.

His memory was quite good. He claimed to know all that was going on at home; told of receiving messages from home by spiritual communication. He was always hinting at mysterious powers, but was very evasive about them. His attitude was quite typically schizophrenic. He told conflicting and fantastic stories, including one involving a kidnapping of his brother. At Foxborough the inability to demonstrate character change, deterioration, delusions or hallucinations was considered to rule out *præcox*, though a happy indifference, egocentricity, boastfulness, fabrication, and absence of memory defect and poor and erratic judgment were advanced as arguments for morosity. These are precisely the points I would urge in favor of *præcox*. Here, then, is a case in which the facts do not particularly differ but in which the interpretation is widely at variance. Eventually, I am sure, the diagnosis would be cleared up and would probably be dementia *præcox*, or possibly *pseudo-logica fantastica*.

The interesting changes in diagnosis from dementia *præcox* to general paresis and to juvenile paresis involve 2 cases worth quoting; the one, because it is apparently one of the rare cases of syphilitic paranoid condition; the other, because of the difficulty in arriving at any diagnosis.

A man of 50 was brought to the Psychopathic Hospital, March 28, 1915, because he went twice to a church for protection from a large crowd of people who were following him. In the admission office he at once wished to know if he was to be killed. On examination he was oriented, and memory was good. School knowledge apparently retained. There were numerous delusions of at least two years' duration. He was very apprehensive, hallucinated, emotional tone schizophrenic. He had many ideas of reference and was somewhat grandiose.

Physically, there were Argyll-Robertson pupils, exaggerated reflexes, and a typical serology of paresis.

Because of the mental picture, a diagnosis of dementia *præcox* paranoid was made and he was sent to Foxborough, where he continued hallucinated and deluded, and with physical and serological signs as given above. At present (1919) he is actively employed each day and does not show the characteristics of general paresis to any marked degree, although his hallucinations and delusions continue. This is, apparently, a typical case of syphilitic paranoid condition.

The other case, a boy of twenty-five, was twice observed at the Psychopathic Hospital, once at the Rhode Island State

Hospital, and once at Foxborough. A definite diagnosis between dementia præcox and manic depressive has never been made at any hospital, though we are now fairly certain of dementia præcox. The interesting point is that at Foxborough a diagnosis of juvenile paresis was made on the basis of the mental and physical findings; rapid deterioration, following grandiose ideas; poor attention; circumstantiality; partial disorientation; calculation; writing and speech defects; fantastic, expansive delusions; auditory hallucinations; egotistic attitude and very slight physical signs. However, the absence of any serological findings, and the failure of progression of physical signs during four years, seems to me sufficient to rule out juvenile paresis, while the more obvious schizophrenia observed this year seems sufficient to establish the diagnosis of præcox.

MANIC DEPRESSIVE.

The second large group of cases is the manic depressive, and it is interesting to find that whereas the Foxborough diagnosis agrees with the Psychopathic diagnosis in practically 90 per cent of cases of dementia præcox, the agreement is only 68 per cent in the case of manic depressive, a rather striking reversal of figures of earlier years and agreeing with the figures found in my recent study.

The most important changes here are the changes to dementia præcox, since those to involution melancholia have been sufficiently discussed above. Three of the 4 cases in which the diagnosis was changed from manic depressive to dementia præcox are clearly from the Psychopathic records schizophrenic, and the diagnosis of manic depressive should not have been made. The fourth is a case in which schizophrenic features did not clearly appear during the stay at the Psychopathic, and it is possible that new developments or the outcome have been the deciding factor in the diagnosis. In the other three cases our interpretation was erroneous. The case in which the diagnosis was changed from manic depressive to senile dementia is very interesting, since, when seen by us, this woman had a good memory, was correctly oriented, was definitely depressed and retarded, but had had no previous attacks, so that this case possibly represents one in which the first signs of the approaching dissolution were to be found in depression.

CEREBROSPINAL SYPHILIS.

In the one case in which the diagnosis was changed to acute alcoholic hallucinosis, our record (1916) shows an alcoholic history, a poor memory for recent events, auditory hallucinations, delusions of persecution and of reference, apathy and indifference, with depression at times. The neurological examination and the Wassermann reaction in blood and spinal fluid were negative, and the diagnosis of neurosyphilis was based on the following cerebrospinal fluid data: albumen increased, globulin increased, cells 21, gold reading 0 0 1 2 2 1 0 0 0 0. The six days' stay at the Psychopathic did not give time for further study. Although the patient is now well and working, one wonders what the future will show, in view of the spinal fluid signs of an organic nervous disease. Certainly, such findings are extremely rare in the alcoholic group in the absence of syphilis.

ACUTE ALCOHOLIC HALLUCINOSIS.

One case was given the diagnosis "epilepsy-alcoholic equivalent in a case of alcoholic hallucinosis" at Foxborough. It is evident that we agreed on the alcoholic side of the case, but Foxborough believes there is an underlying epileptic personality as a basis for the alcohol, and so extends the diagnosis further back into the fundamental personality trends underlying psychotic manifestations. Another case was called toxic psychosis (lead). We had no evidence of any lead encephalopathy. Such cases usually show symptoms of dementia rather than of recoverable paranoid type. Accordingly, I am not quite convinced that the second diagnosis is correct.

OTHER PSYCHOSES.

With respect to the psychoses of the involution period, it is quite clear then, from even a cursory survey of cases arising, that a variety of types are encountered. Whether all of these diverse pictures are to be regarded as basically one disorder, is a question which I am not prepared to answer. Theoretically and statistically, there is ample justification for believing that several types of psychoses may arise in this period. Accordingly, all cases should be carefully scrutinized to determine if they are of some other type than the so-called involution melancholia, and this diagnosis should be reserved for cases characterized by

the predominance of depression. The more common types of psychosis encountered in this age period are dementia præcox, manic depressive, presenile delusional, and a group of cases which cannot better be diagnosed than paranoic conditions. Hence, no special quarrel can ever be raised with the diagnoses of the groups with onset in this age period, so long as such diagnoses are based on thorough-going, symptom analyses and interpretations.

Another very difficult group, from the standpoint of diagnosis, is the paranoic group. We deal here with a wide range of possibilities, since any group of mental disorder may be characterized by paranoid symptoms. So the term "paranoic condition" should be, as it is, reserved for those cases in which no other diagnosis can be made. Incidentally, such a diagnosis is called a diagnosis only by courtesy, since what we do is to give a clinical description without particular etiologic or pathologic ideas in mind. The term formerly used — "undiagnosed paranoid state" — really expresses what we do in the way of diagnosis.

Of the various cases in which a diagnosis of the type of paranoid state was made, after the Psychopathic had failed to make such distinction, one is quite striking. This was the case of a colored woman of sixty-three, admitted to the Psychopathic, Oct. 24, 1914, because of a sudden excitement. For ten years she had had facial neuralgia, and now there was marked arteriosclerosis. While in the hospital, waiting for operation, she developed ideas of reference and possible auditory hallucinations. At the Psychopathic the ideas continued. Memory was only slightly impaired. There was a positive Wassermann reaction in the blood serum. At Foxborough the patient continued hallucinated and deluded, and the diagnosis of senile dementia was made. If senile dementia in this case means the simple deterioration type, then the diagnosis is incorrect. There are three diagnostic possibilities: senile paranoid condition, arteriosclerotic paranoid condition, and a syphilitic paranoid condition, of which the first is probably more nearly correct.

Other changes are scattered and need no particular comment, but one further case deserves special mention: This was a woman of thirty-five, at the Psychopathic for over a month in 1918. She had been for three years very unhappy over an unfortunate love affair, and could not rid herself of thoughts of the man. She lost her ambition and interest, though she kept on working,

and made many demands for sympathy. She then began to complain of an enemy who spread defamatory tales about her. No definite ideas of persecution were obtained, and no hallucinations. A diagnosis of psychogenic psychosis was made. In February, 1919, at another institution, she first showed some excitement and began to elaborate delusions around a physician at the Psychopathic. Hallucinations in many fields appeared; there were many delusions and conduct disorder developed. Transferred to Foxborough, the condition continued there. She was very resistive, impulsive, assaultive and hallucinated. She became stuporous and died of broncho-pneumonia, and a diagnosis of dementia præcox seems quite correct.

Finally, we have a group in which the Psychopathic failed to arrive at a diagnosis. All such cases are of great interest both theoretically and practically, and a very great advance may be expected from a careful study of such cases. The diagnoses made at Foxborough in this group seem to be eminently proper. The 2 cases which remained undiagnosed do so because of language difficulty.

SUMMARY.

We can then summarize this report by saying that the diagnostic standards at Foxborough and at the Psychopathic are on much the same level. Of 17 unclassified cases, Foxborough has classified all but 2. Diagnoses agree in the two institutions in 90 per cent of cases of præcox, 68 per cent of cases of manic depressive, and in all cases of general paresis. The total agreement on two-thirds of the diagnosed cases is 77 per cent. The reasons for variation in diagnostic opinion will usually be found to be either —

1. Verbal changes, representing no real difference.
2. Variations in the evaluation of indirect evidence.
3. Cases in which different phases of a psychotic picture are seen.
4. Difference in standards of diagnosis, of which not the least is the dependence by many people upon outcome as the most important, single diagnostic standard, which I am convinced is a wrong viewpoint.

Table I.

| DIAGNOSES. | Psycho-
pathic. | FOXBOROUGH. | | Per Cent
Agree. |
|---|--------------------|-------------|------------|--------------------|
| | | Agrees. | Disagrees. | |
| Dementia præcox, | 115 | 102 | 13 | 89.5 |
| Manic depressive, | 29 | 20 | 9 | 68.0 |
| General paresis, | 15 | 15 | — | 100.0 |
| Neurosyphilis, | 4 | 3 | 1 | 75.0 |
| Acute alcoholic hallucinosis, | 7 | 5 | 2 | 71.0 |
| Psychosis with mental deficiency, | 4 | — | 4 | — |
| Mental deficiency, | 5 | 4 | 1 | 80.0 |
| Senile dementia, | 4 | 4 | — | 100.0 |
| Arteriosclerotic psychosis, | 5 | 4 | 2 | 67.0 |
| Involution melancholia, | 4 | 2 | 2 | 50.0 |
| Presenile psychoses, | 2 | 1 | 1 | 50.0 |
| Psychoneurosis, | 1 | 1 | — | 100.0 |
| Psychosis with organic brain disease, | 1 | 1 | — | 100.0 |
| Paranoic condition, | 6 | — | 6 | — |
| Prolonged delirium tremens, | 1 | — | 1 | — |
| Chronic alcoholism, | 1 | — | 1 | — |
| Paraphrenia, | 3 | 2 | 1 | 67.0 |
| Korsakow's psychosis, | 1 | 1 | — | 100.0 |
| Alcoholic and manic depressive, | 1 | — | 1 | — |
| Arteriosclerosis and senile dementia, | 1 | — | 1 | — |
| Psychogenic psychosis, | 1 | — | 1 | — |
| Psychosis with constitutional psychopathic inferiority. | 1 | — | 1 | — |
| Total, | 213 | 165 | 48 | 77.0 |
| Alcoholic hallucinosis and general paresis, | 1 | 1± | 1± | 77.0 |
| Unclassified, | 17 | 2 | 15 | — |
| Grand total, | 231 | 168 | 63 | — |

TABLE II. — *Diagnoses at Psychopathic and at Foxborough.*

| DIAGNOSES. | | FOXBOROUGH. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-------------|----|----|---|---|---|----|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|--|--|
| Psycho-
pathic. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | | | | |
| 1. Dementia præcox, | 115 | 102 | 6 | 2 | 1 | — | 4 | — | 1 | — | 3 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 2. Manic depressive, | 29 | 4 | 20 | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | | | | |
| 3. General paresis, . . | 15 | — | — | 15 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 4. Neurosyphilis, . . . | 4 | — | — | — | 3 | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 5. Acute alcoholic hallucinosis, | 7 | — | — | — | — | 5 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | | | | |
| 6. Psychosis with mental deficiency, | 4 | — | — | — | — | — | — | 3 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 7. Mental deficiency, | 5 | — | — | — | — | — | — | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 8. Senile dementia, . . | 4 | — | — | — | — | — | — | — | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 9. Arteriosclerotic psychosis, | 6 | 1 | — | — | — | — | — | — | 1 | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 10. Involution melancholia, | 4 | 1 | 1 | — | — | — | — | — | 1 | — | 2 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 11. Undiagnosed psychosis, | 17 | 5 | 4 | — | — | — | — | 2 | — | 2 | — | 1 | — | — | — | — | — | — | — | — | — | — | — | 1 | — | — | — | | | | |
| 12. Presenile psychosis, | 2 | 1 | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 13. Psychoneurosis, . . | 1 | — | — | — | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 14. Psychosis with organic brain disease, | 1 | — | — | — | — | — | — | — | 1 | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 15. Paranoic condition, | 1 | 2 | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 | — | — | | | | |
| 16. Delirium tremens, | 6 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | | | | |
| 17. Chronic alcoholism, | 1 | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 18. Paraphrenia, . . . | 3 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 2 | — | — | — | — | — | 1 | — | — | | | | |
| 19. Korsakow's psychosis, | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | | | | |
| 20. Alcoholic and manic depressive, | 1 | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 21. Senile dementia and arteriosclerosis, | 1 | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 22. Psychogenic psychosis, | 1 | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 23. Psychosis with constitutional psychopathic inferiority, | 1 | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 24. Infectious psychosis, | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 25. Epileptic-alcoholic equivalent, | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 26. Toxic, lead, | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 27. Alcoholic hallucinosis dementia, | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 28. Alcoholic paranoid, | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 29. Alcoholic delusional, | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| 30. Paranoia, | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| Totals, | 230 | 119 | 32 | 17 | 3 | 7 | 1 | 14 | 8 | 6 | 5 | 2 | 2 | 1 | 1 | — | — | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |

One diagnosis was alcoholic hallucinosis and general paresis to general paresis and chronic alcoholism.

Volume III

NOV 10

No. 4

BULLETIN

OF THE

**MASSACHUSETTS COMMISSION ON
MENTAL DISEASES**

(PUBLISHED QUARTERLY)

OCTOBER, 1919

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT BOSTON

BULLETIN

OF THE

MASSACHUSETTS COMMISSION ON MENTAL DISEASES

(PUBLISHED QUARTERLY)

EDITED UNDER THE PROVISIONS OF ACTS OF 1909, CHAPTER 504, SECTION 6, BY

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OCTOBER, 1919

PUBLICATION OF THIS DOCUMENT
APPROVED BY THE
SUPERVISOR OF ADMINISTRATION.

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ENVIRONMENTAL ORIGIN OF MENTAL DISEASE IN CERTAIN FAMILIES.*

BY L. VERNON BRIGGS, M.D.,

SECRETARY OF THE MASSACHUSETTS STATE BOARD OF INSANITY.

I find that there is a deep-seated idea among the general public that most insanity is hereditary and, therefore, inevitable; but it seems to me that many members of our profession are only too prone to accept this hypothesis upon insufficient evidence. How little we know, after all, of the real causes of mental disease, with the possible exception of general paralysis! We find mental disease common in certain families, and nine times out of ten we jump to the conclusion that "heredity" is the predisposing cause. Have we any real scientific basis for such an assumption? What have we done, for instance, in the pathology of mental disease, other than general paralysis, to warrant us in excluding the germ theory? Who has made a thorough, scientific study of any large groups of families where two or more members are known to be insane? What do we know of the origin of the initial cases in these families? And what were the predisposing causes in these initial cases — such as alcoholism, environment, or mental suggestion?

I have long desired to make such a study, and with this object in view have collected a mass of statistics from our various Massachusetts State hospitals, which I offer as merely suggestive to the unprejudiced mind of the vast possibilities in the causation of insanity in these family cases.

It is my hope in the course of time to make an intensive study of the more significant of these families, with the various possibilities in mind, to learn their histories, past and present, their environment, the characteristics of the normal as well as the abnormal members of these families, and of the possible suggestive results of one case in the family. I feel that such studies must be conclusively carried out before we have a right to make so free with that very convenient but damnable word, "heredity."

* Read at the seventy-second annual meeting of the American Medico-Psychological Association, New Orleans, La., April 4 to 7, 1916.

These data are offered for what they are worth. Family histories in all instances are incomplete, and in few, if any, cases have they been verified, but I consider them quite as conclusive from the point of view of environment or mental suggestion as from that of heredity. I have taken all cases of insanity in families as submitted, and classified them without selection.

The data presented represent figures from Massachusetts State hospitals. One is a miscellaneous group, taken from the following hospitals: —

Boston State Hospital.
Bridgewater State Hospital.
Danvers State Hospital.
Gardner State Colony.
Medfield State Hospital.

Monson State Hospital.
State Infirmary, Tewksbury.
Westborough State Hospital.
Worcester State Hospital.

These cases are presented in the first column of the following table. In the second column from this miscellaneous group are cases reported by the Northampton State Hospital, and the third column represents those cases taken from the Wrentham State School for the Feeble-minded.

Because of the different viewpoints of the various collaborators in this work, it has been deemed necessary to give the data in these groups separately.

| | Nine
Hospitals. | North-
ampton. | Wren-
tham. | Total. |
|--|--------------------|-------------------|----------------|--------|
| Sisters (see also mother-daughter), | 29 | 16 | 23 | 68 |
| Brothers (see also mother-son-daughter), | 22 | 23 | 10 | 55 |
| Brothers-sisters (see also mother-son-daughter), | 31 | 32 | 18 | 81 |
| Husband-wife, | *5+2 | †1 | — | 6+2 |
| Mother-daughter, | 16 | 18 | — | 34 |
| Mother-son-daughter, | 2 | — | — | 3 |
| Mother-son (see also husband-wife; mother-son-daughter), | 13 | 10 | — | 23 |
| Father-son (see also husband-wife), | 10 | 14 | — | 24 |
| Father-daughter, | 5 | 3 | — | 8 |
| | 134+2 | 117 | 51 | 302+2 |

* +2 incidentally mentioned in Worcester single cases.

† Mentioned incidentally in history of another case.

The figures from Taunton State Hospital, representing a study carried on for a very much longer period of time than has been the case in the figures presented by the other hospitals, have been analyzed according to —

(1) The generations represented.

(2) The type of relationship represented and according to sex. Further, the data have been analyzed with regard to the question of anticipation of antedating, *i.e.*, to discover whether or not the tendency was for a descendant to succumb to mental disease at an earlier age than the ancestor. The following figures, then, present these data: —

TWO GENERATIONS.

Father and Descendants.

| | |
|----------------------|----|
| Fathers, | 86 |
| Sons, | 45 |
| Daughters, | 47 |

Mother and Descendants.

| | |
|----------------------|-----|
| Mothers, | 106 |
| Sons, | 55 |
| Daughters, | 75 |

Uncle and Descendants.

| | |
|--------------------|----|
| Uncles, | 47 |
| Nephews, | 32 |
| Nieces, | 21 |

Aunt and Descendants.

| | |
|--------------------|----|
| Aunts, | 53 |
| Nephews, | 33 |
| Nieces, | 28 |

Mixed (Direct and Collateral Ancestors).

| | |
|--------------------|----|
| Males, | 61 |
| Females, | 54 |

ONE GENERATION.

Siblings.

| | |
|-----------------------------|-----|
| Number of groups, | 247 |
| Males, | 236 |
| Females, | 285 |

Collaterals (Cousins).

| | |
|-----------------------------|----|
| Number of groups, | 54 |
| Males, | 65 |
| Females, | 46 |

Mixed (Siblings and Cousins).

| | |
|-----------------------------|----|
| Number of groups, | 8 |
| Males, | 8 |
| Females, | 24 |

Man and Wife.

| | |
|------------------------------|----|
| Number of couples, | 36 |
|------------------------------|----|

ACCORDING TO GENERATIONS.

| | |
|--------------------------------------|-----|
| Four-generation family, | 1 |
| Three-generation families, | 22 |
| Two-generation families, | 333 |
| 189 direct relationship. | |
| 112 collateral relationship. | |
| 32 mixed (direct and collateral). | |
| One-generation families, | 330 |

Total, 686

330 one-generation families, divided as follows: —

247 sibling families.

51 collateral families.

32 mixed (siblings and collaterals).

ANALYZED BY BLOOD RELATIONSHIP.

It will be obvious that the man who is represented as the father in a father-son combination may appear in this group as the uncle in an uncle-nephew combination. In other words, numerically this analysis does not correspond to the total number of cases.

| | |
|-----------------------------------|-----|
| Total females, | 789 |
| Total males, | 719 |
| Father-daughter groups, | 59 |
| Father-son groups, | 55 |
| Mother-daughter groups, | 80 |
| Mother-son groups, | 56 |
| Uncle-niece groups, | 37 |
| Uncle-nephew groups, | 41 |
| Aunt-niece groups, | 42 |
| Aunt-nephew groups, | 43 |
| Brothers alone groups, | 65 |
| Sisters alone groups, | 90 |
| Brother-sister groups, | 166 |
| Husband-wife groups, | 36 |
| Cousinship, | 73 |

Upon analysis we find —

- Mother-daughter groups greater than father-daughters.
- Mother-son groups about equal to father-son.
- Aunt-nephew groups greater than uncle-nephew.
- Aunt-niece groups greater than uncle-niece.
- Sister groups greater than brother groups.
- Brother-sister groups greater than brother groups or sister groups.
- Total females greater than total males.

DATA AS TO ANTICIPATION.

These data are not complete, *i.e.*, they do not concern the total number of cases involved. The reasons for this will be obvious to any one who has attempted to analyze old records, — many of them are defective and many ambiguous, so that it was deemed wiser to omit in many cases such groups where the figures were not clear.

Further, in many cases the figures here presented are probably inaccurate, *i.e.*, they do not represent the actual age at onset of either ancestor or descendant.

No three-generation families have been analyzed, as the problem here became more complex than could at present be easily handled.

FATHERS AND DESCENDANTS.

- A. Ancestor older than descendant at age of onset (cases), . . . 67
1. Difference of 25 years and over between onset of psychosis in father and descendant — 33 families (18 sons, 17 daughters).
 - Ancestor between 30 and 40, none.
 - Ancestor between 40 and 50, 7 cases, 27 years average difference.
 - Ancestor between 50 and 60, 8 cases, 33 years average difference.
 - Ancestor between 60 and 70, 12 cases, 39 years average difference.
 - Ancestor between 70 and 80, 2 cases, 32 years average difference.
 - Ancestor between 80 and 90, 4 cases, 50 years average difference.
 2. Difference of 20 to 30 years between ages of onset — 11 families (5 sons, 6 daughters).
 - Ancestor between 30 and 40, 1 case.
 - Ancestor between 40 and 50, 5 cases.
 - Ancestor between 50 and 60, 2 cases.
 - Ancestor between 60 and 70, 1 case.
 - Ancestor between 70 and 80, 2 cases.

3. Difference of 15 to 20 years between ages of onset — 7 families (5 sons, 5 daughters).
 - Ancestor between 30 and 40, 2 cases.
 - Ancestor between 40 and 50, 3 cases.
 - Ancestor between 60 and 70, 2 cases.
4. Difference of 5 to 15 years between ages of onset — 14 families (9 sons, 5 daughters).
 - Ancestor between 20 and 30, 1 case.
 - Ancestor between 30 and 40, 3 cases.
 - Ancestor between 40 and 50, 5 cases.
 - Ancestor between 50 and 60, 1 case.
 - Ancestor between 60 and 70, 2 cases.
 - Ancestor between 70 and 80, 2 cases.
5. Difference of 0 to 5 years between ages of onset — 2 cases (1 son, 1 daughter).
 - Ancestor between 40 and 50, 1 case.
 - Ancestor between 50 and 60, 1 case.
- B. Descendant older than ancestor at age of onset (cases), . . . 12
 1. Difference of 0 to 5 years between ages of onset — 8 cases (4 sons, 4 daughters).
 - Ancestor between 20 and 30, 2 cases.
 - Ancestor between 30 and 40, 2 cases.
 - Ancestor between 40 and 50, 4 cases.
 2. Difference of 5 to 10 years between ages of onset — 2 cases.
 - Ancestor between 50 and 60, 1 case.
 - Ancestor between 60 and 70, 1 case.
 3. Difference of 15 to 20 years between ages of onset — 1 case (1 daughter).
 - Ancestor between 20 and 30, 1 case.
 4. Difference of 25 years and over between ages of onset — 1 case (1 daughter, 30 years average difference).
 - Father older than descendant is to the reverse as 67 is to 12.

MOTHERS AND DESCENDANTS.

- A. Ancestor older than descendant at age of onset (cases), . . . 77
 1. Difference of 25 years and over between ages of onset of psychosis in mother and descendant — 30 cases (21 daughters, 18 sons).
 - Ancestor between 30 and 40, 3 cases, 30 years average difference.
 - Ancestor between 40 and 50, 4 cases, 29 years average difference.
 - Ancestor between 50 and 60, 8 cases, 30 years average difference.

Ancestor between 60 and 70, 10 cases, 34 years average difference.

Ancestor between 70 and 80, 5 cases, 36 years average difference.

2. Difference of 20 to 25 years between ages of onset — 14 cases (10 sons, 9 daughters).

Ancestor between 20 and 30, 1 case.

Ancestor between 30 and 40, 1 case.

Ancestor between 40 and 50, 5 cases.

Ancestor between 50 and 60, 5 cases.

Ancestor between 60 and 70, 1 case.

Ancestor between 70 and 80, 1 case.

3. Difference of 15 to 20 years between ages of onset — 17 cases (11 daughters, 9 sons).

Ancestor between 20 and 30, 1 case.

Ancestor between 30 and 40, 2 cases.

Ancestor between 40 and 50, 7 cases.

Ancestor between 50 and 60, 4 cases.

Ancestor between 60 and 70, 2 cases.

Ancestor between 70 and 80, 1 case.

4. Difference of 5 to 15 years between ages of onset — 11 cases.

Ancestor between 20 and 30, 1 case.

Ancestor between 30 and 40, 3 cases.

Ancestor between 40 and 50, 3 cases.

Ancestor between 50 and 60, 3 cases.

Ancestor between 60 and 70, 1 case.

5. Difference of 0 to 5 years between ages of onset — 5 cases (5 sons, 1 daughter).

Ancestor between 30 and 40, 4 cases.

Ancestor between 50 and 60, 1 case.

6. Five families — 13 members, 5 groups.

Where all the members are about the same age.

B. Descendant older than ancestor at age of onset (cases), . . . 11

1. Difference of 0 to 5 years between ages of onset — 3 cases (3 daughters).

Ancestor between 20 and 30.

2. Difference of 5 to 10 years between ages of onset — 4 cases (4 daughters).

Ancestor between 20 and 30, 2 cases.

Ancestor between 30 and 40, 2 cases.

3. Difference of 10 to 15 years between ages of onset — 4 cases (1 son, 3 daughters).

Ancestor between 20 and 30, 2 cases.

Ancestor around 40, 2 cases.

Mother older than descendant is to the reverse as 77 is to 11.

UNCLES AND DESCENDANTS.

- A. Ancestor older than descendant at age of onset (cases), . . . 39
1. Difference of 25 years and over between ages of onset of psychosis in uncle and descendant — 13 cases (9 nephews, 5 nieces).
 - Ancestor between 40 and 50, 4 cases, 27 years average difference.
 - Ancestor between 50 and 60, 5 cases, 29 years average difference.
 - Ancestor between 60 and 70, 3 cases, 38 years average difference.
 - Ancestor between 70 and 80, 1 case, 27 years average difference.
 2. Difference of 15 to 25 years between ages of onset — 8 cases (5 nephews, 5 nieces).
 - Ancestor between 30 and 40, 3 cases.
 - Ancestor between 40 and 50, 3 cases.
 - Ancestor between 70 and 80, 1 case.
 - Ancestor between 80 and 90, 1 case.
 3. Difference of 10 to 15 years between ages of onset — 11 cases (5 nephews, 5 nieces).
 - Ancestor between 30 and 40, 5 cases.
 - Ancestor between 40 and 50, 1 case.
 - Ancestor between 50 and 60, 5 cases.
 4. Difference of 0 to 5 years between ages of onset — 7 cases (9 nephews, 1 niece).
 - Ancestor between 20 and 30, 3 cases.
 - Ancestor between 30 and 40, 1 case.
 - Ancestor between 40 and 50, 2 cases.
 - Ancestor between 50 and 60, 1 case.
- B. Descendant older than ancestor at age of onset (cases), . . . 5
1. Difference of 0 to 5 years between ages of onset — 3 cases (2 nephews, 1 niece).
 - Ancestor between 20 and 30.
 2. Difference of 7 years between ages of onset — 1 case (1 niece).
 - Ancestor between 40 and 50.
 3. Difference of 13 years — 1 case (1 nephew).
 - Ancestor between 20 and 30.
- Uncles older than descendants is to the reverse as 39 is to 5.

AUNTS AND DESCENDANTS.

- A. Ancestor older than descendant at age of onset (cases), . . . 31
1. Difference of 25 years and over between ages of onset of psychosis in aunt and descendant — 15 cases (10 nephews, 6 nieces).

- Ancestor between 40 and 50, 2 cases, 31 years average difference.
- Ancestor between 50 and 60, 5 cases, 36 years average difference.
- Ancestor between 60 and 70, 6 cases, 40 years average difference.
- Ancestor between 80 and 90, 2 cases, 60 years average difference.
2. Difference of 15 to 25 years between ages of onset — 8 cases (4 nephews, 4 nieces).
- Ancestor between 30 and 40, 4 cases.
- Ancestor between 50 and 60, 2 cases.
- Ancestor between 60 and 70, 1 case.
- Ancestor between 70 and 80, 1 case.
3. Difference of 10 to 15 years between ages of onset — 6 cases.
- Ancestor between 20 and 30, 1 case.
- Ancestor between 30 and 40, 4 cases.
- Ancestor between 40 and 50, 1 case.
4. Difference of 0 to 5 years between ages of onset — 2 cases.
- Ancestor between 50 and 60, 1 case.
- Ancestor between 60 and 70, 1 case.
5. Non-pertinent cases, 2
- B. Descendant older than ancestor at age of onset, 13
1. Difference of less than 5 years between ages of onset — 5 cases (3 nephews, 2 nieces).
- Ancestor between 20 and 30, 2 cases.
- Ancestor between 30 and 40, 1 case.
- Ancestor between 40 and 50, 2 cases.
2. Difference of 5 to 10 years between ages of onset — 4 cases (2 nephews, 2 nieces).
- Ancestor between 20 and 30, 3 cases.
- Ancestor between 40 and 50, 1 case.
3. Difference of 15 to 25 years between ages of onset — 4 cases.
- Ancestor between 20 and 30.
- Aunts older than descendants is to the reverse as 31 is to 13.

In order to eliminate the possibility that the earlier age of onset in the case of the descendant is due to the fact that in later years people entered hospitals for the insane at an earlier age, the following statistical studies were undertaken.

The age of admission to the Taunton State Hospital was taken for 1,000 cases between May 5, 1865, and May 5, 1869, also 1,000 cases between May 10, 1880, and Dec. 1, 1883, and the same number of cases from April 3, 1914, to Jan. 28, 1916. Care

was taken to avoid periods where changes in the State laws brought in an influx of elderly patients.

In addition to these figures, the admissions were analyzed according to age groups, and in the following tables these statistics show clearly that the average age of onset in the Taunton State Hospital is much later in the more modern hospital than in the earlier hospital, and that this tendency to the later age of admission is a steady growth.

Further, if one judges by age groups, the same phenomenon is observed, *i.e.*, that there was a higher percentage of young patients, between 20 and 30, admitted in 1865 than in 1916. These figures, of course, show that the anticipation of antedating is a phenomenon not at all dependent upon admission age to the hospital, but, in fact, runs exactly counter to it.

AVERAGE AGE OF ONE THOUSAND CASES ADMITTED BETWEEN MAY 5,
1865, AND MAY 5, 1869.

| | |
|--|------|
| Average age (years), | 37.7 |
| Number of cases between 20 and 30 (inclusive), | 270 |

AVERAGE AGE OF ONE THOUSAND CASES ADMITTED BETWEEN MAY 10,
1880, AND DEC. 1, 1883.

| | |
|--|------|
| Average age (years), | 40.7 |
| Number of cases between 20 and 30 (inclusive), | 252 |

AVERAGE AGE OF ONE THOUSAND CASES ADMITTED BETWEEN APRIL 3,
1914, AND JAN. 28, 1916.

| | |
|--|------|
| Average age (years), | 46.9 |
| Number of cases between 20 and 30 (inclusive), | 212 |

The later age of admission is probably due to the fact that of late more old people enter insane hospitals, but there remains no doubt that even in the earliest days of the Taunton State Hospital insanity was as early recognized and cared for as to-day.

The data from the other hospitals, in so far as anticipation is concerned, have not been so carefully analyzed, but they bear out almost unanimously the statistics and the conclusions drawn from the Taunton State Hospital cases.

In other words, for the miscellaneous hospitals, the ancestor entered the hospital usually at a much later age than did his descendant.

The following general statements may be made regarding the psychoses presented in the various groups:—

In the first place, in a general way it may be said that some pairs of one generation represented, on the whole, more nearly similar mental states than did those of two generations, *i.e.*, brother-and-brother groups, sister-and-sister groups, brother-and-sister groups, were more nearly alike in psychotic type than were father-and-son, mother-and-son, etc.

To amplify this statement a little further will no doubt lend it clearness. The senile dementia, involution psychosis and manic-depressive psychoses in an ancestor are quite likely to be followed by dementia præcox or imbecility, as well as by a more or less similar psychosis. On the other hand, it is rare to find an ancestor presenting a dementia præcox type of psychosis who has a descendant with manic-depressive insanity. This is also true of senile dementia, *i.e.*, it is likely to occur in an ancestor, but is not likely to occur in the descendant.

Further, if an ancestor has dementia præcox and the descendant also has the same disease, then the type of psychosis is likely to be worse in the descendant than in the ancestor, *i.e.*, a paranoid form of dementia præcox is apt to be followed by hebephrenic or catatonic type in the descendant with earlier dementia, more profound disintegration and more imbecility.

This correlates in a general way with the fact that the psychosis in the ancestor has its onset at a later age than that of the descendant, but even where the onset is of the same age the tendency is for the psychosis to be of a worse type. It is true that in a certain number of cases, especially those from the Taunton State Hospital, the reverse is seen, *i.e.*, a deteriorated dementia præcox will give rise in the next generation to a manic-depressive insanity; but this is, on the whole, a rare phenomenon.

The following groups show the earlier age of onset in the descendants, and the types following the disease:—

MOTHER-DAUGHTER (S).

(See also Mother-Son-Daughter.)

EXPLANATION OF ABBREVIATIONS.

| | | | |
|-----------|----------------------------|-----------|-------------------------------|
| d. p., | dementia præcox. | c. m. d., | congenital mental deficiency. |
| m. d. i., | manic-depressive insanity. | (m), | married. |
| alc., | alcohol, etc. | (w); | widowed. |

[Figures represent age at admission.]

| | | | |
|------|---|------|---|
| M 74 | c. m. d. | D 35 | d. p. |
| D 42 | epileptic insane. | M 60 | moron (alc.) (married twice; both degenerate). |
| M 79 | senile psychosis. | D 20 | feeble-minded, low grade. |
| D 40 | d. p. paranoid. | M 60 | involutional psychosis. |
| M 73 | paranoid condition. | D 30 | d. p. |
| D 47 | d. p. paranoid. | M 71 | d. p. |
| D 37 | d. p. (last to break down). | D 34 | d. p. |
| D 27 | d. p. | M 70 | senile d. |
| M 67 | senile psychosis. | D 33 | d. p. |
| D 35 | imbecility with congenital hemiplegia and an episode of excitement. | M 63 | m. d. (worry over insanity of daughter given as exciting cause, but onset given as 2 years previous to daughter's). |
| M 65 | senile d. | D 34 | m. d. |
| D 43 | d. p. (spoiled child). | M 52 | d. p. |
| M 62 | paranoid. | D 24 | d. p. (religious excitement). |
| D 31 | folie à deux (with mother constantly; separation in hospital attempted but had to be given up). | M 56 | d. p. (ill health). |
| M 62 | arteriosclerotic insane. | D 28 | d. p. |
| D 37 | d. p. | M 61 | epilepsy (imbecile) (menopause; husband alc.). |
| M 65 | d. p. catatonic, delusional (overwork; pneumonia). | D 21 | epilepsy (imbecile). |

FATHER-SON.

| | | | |
|------|---|------|---|
| F 57 | m. d. i. | F | recur. ins., maniacal. |
| S 22 | d. p. | S 33 | (m.) m. d., manic. |
| F 62 | organic d. (rt. hemiplegia; cerebral hemorrhage). | F | epilepsy with mental deterioration and hallucinations. |
| S 19 | d. p. | S 24 | (m.) m. d. (hypomanic). |
| F 43 | chronic alc. hallucinosis. | F 67 | general paralysis (loss of property). |
| S 24 | d. p. | S 58 | imbecile (fall in childhood; diphtheria; brain fever.) |
| F 64 | d. p., probably imbecilic basis. | F 56 | d. p., alc. (worry about wayward daughter; wife very low mental order). |
| S 36 | imbecile, considerably demented. | S 22 | d. p. (injured in back and stomach). |
| F 60 | imbecile. | S 21 | d. p. |
| S 33 | imbecile. | | |
| F 60 | d. p. (paranoid). | | |
| S 23 | d. p. | | |
| S 22 | acute confusional insanity. | | |

The following tables show that the age of onset is about the same in siblings, as are also the forms of mental disease: —

BROTHERS.

(See also Mother-Son-Daughter.)

| | |
|--|---|
| 50 (m.) general paresis. | 25 d. p. |
| 78 (w.) cerebral arteriosclerosis. | 26 d. p. |
| 31 d. p. | 31 (d. p.?) |
| 40 m. d., depressed. | 27 idiot from birth. |
| B d. p. | 31 imbecile, low grade. |
| B d. p. | 34 (m.) d. p. catatonic form. |
| B c. m. d. | 36 d. p. catatonic form (father insane). |
| B c. m. d. | 52 imbecile; at poor farm 20 years. |
| B d. p. | 55 imbecile; at poor farm. |
| 19 d. p. | 48 d. p. |
| 30 (m.) primary delusional insanity,
d. p.? | 49 d. p. |
| 37 d. p. | 23 d. p. |
| 30 d. p. | 35 d. p. |
| 31 d. p. Later: m. d. i. | 30 alc. i., with epilep. conv. |
| 30 d. p. | 37 (m.) constitutional inferiority. |
| 35 d. p. | 42 m. d. i. (mixed) (worried over poli-
tics and death of aunt). |
| 22 imbecility (cong.) | 45 (m.) psychosis with organic brain
dis. (lead poisoning) (attributes
trouble to errant daughter). |
| 26 imbecility 2 (Friedrich's ataxia). | 21 (m.) "nervous excitement." |
| 35 d. p. (studied hard). | 39 d. p., alc. (father died at Medfield;
1 sister had epilepsy.) |
| 39 organic d. (post apoplectic) (right
hemiplegia). | 35 d. p. (alc.). |
| 25 acute a. i. | 33 d. p. (alc.). |
| 26 imbecile. | |
| 23 (demented). | |
| 27 (demented). | |

SISTERS.

| | |
|---|---|
| 33 d. p., paranoid. | 42 d. p. (married). |
| 40 d. p., paranoid (married). | 50 d. p. (married). |
| 35 m. d. i. | 34 d. p. paranoid. |
| 48 m. d. i. (depressed form) (married). | 39 paranoia (married). |
| 24 d. p., paranoid. | 50 m. d. (married). |
| 30 d. p., paranoid. | 54 not insane. |
| 30 d. p., much deteriorated. | 40 d. p. (brother at Worcester). |
| 31 d. p., borderline case, m. d. i.? | 45 m. d. (brother at Worcester). |
| 39 m. d. i. | 35 d. p. with moderate deterioration. |
| 27 d. p., inclining to paranoid (mar-
ried). | 46 m. d. i. (worry over husband).
(Niece formerly at Westbor-
ough.) |
| 39 constitutional inferiority. | 24 imbecile (mother at Worcester). |
| 14 d. p. catatonia. | 26 moron (mother at Worcester). |
| 16 m. d. i.; d. p.? | 38 feeble-minded, low grade. |
| 26 d. p. | 41 demented, "takes entire charge of
sister" (mother feeble-minded). |
| 37 alcoholic hallucinosis. | 31 feeble-minded (has illegitimate
child). |
| 67 paranoid (unclassified). | 38 hypochondriacal (at 27 had typhoid
fever, followed by psychosis;
mother insane; father alcoholic). |
| 70 arteriosclerotic brain dis. | |
| 52 organic dis. (syphilitic?) (widow). | |
| 64 senile psychosis. | |
| 27 d. p. | |
| 36 d. p. (married). | |

- | | |
|---|--|
| 22 c. m. d. | 36 d. p. (grandfather and 3 uncles in- |
| 26 c. m. d. | sane). |
| 23 c. m. d. with m. d. superimposed | 37 d. p. |
| (adopted by others). | 39 d. p. |
| Half-sister, 34, d. p. (hebephrenic) | 37 d. p. (hysterical disposition) (meno- |
| (shocked by death of fiancé). | pause). |
| Half-sister, acute confus. insanity | 30 chronic mania (weak-minded). |
| (death of infant) (1, acute mel- | 29 d. p. |
| ancholia). | 27 d. p. (mother insane). |
| 45 (2, chronic melancholia). (Cheer- | 42 d. p. (fear of losing position). |
| ful disposition) (married). | 36 d. p. (ill health). |
| 53 arteriosclerotic dementia (married | 16 epilepsy (imbecile). |
| three times; now divorced). | 16 epilepsy (imbecile). |
| 35 alcoholic insanity. | Sister, epilepsy (moron). |
| 59 m. d. i., manic phase (has son 25. | Sister, 13, epilepsy. |
| "Unclassed, probably m. d. | Mother, imbecile, immoral. |
| (manic)," syphilis). | Father, alcoholic; uncle and grand- |
| 26 d. p. (overwork with venereal exc.). | father epileptic. |

BROTHER(s)-SISTER(s).

(See also Mother-Son-Daughter.)

- | | |
|---|---------------------------------------|
| B d. p. | B 24 d. p. constitutional basis. |
| S 27 d. p. | S 28 d. p. catatonic (hyper-reli- |
| B d. p. | gious). |
| S 41 d. p. | B 44 primary d. |
| B 38 m. d. i. (married, divorced, mar- | S 44 d. p., paranoid (threatened sis- |
| ried). | ter). |
| S 28 d. p. | S 27 1st and 2d, subacute melan- |
| B 29 d. p., considerable deterioration. | cholia, 3d, secondary d. |
| S 32 d. p. | S 27 primary delusional insanity |
| B 26 d. p. | (shocked by fiancé). |
| S 35 d. p., hebephrenic (father at | B 20 chronic mania. |
| Worcester). | B 23 d. p. catatonic. |
| S 28 d. p. | S 16 unclassified; between m. d. and |
| B 45 (intestinal obstruction). | d. p. on constitutional basis |
| B 36 d. p. paranoid. | (father and mother very low |
| S epilepsy. | order of intelligence). |
| B 21 feeble-minded from birth; Was- | B 52 alc. hallucinosis, probably de- |
| sermann doubtful. | veloping d. p. |
| S feeble-minded from birth appar- | S 40 imbecility with d. p. |
| ently. | S 29 d. p. (fright). |
| S 18 (simulating hysteria). | B 31 d. p. (hebephrenic). |
| B 24 moron (traumatism). | B 25 d. p. paranoid type (malaria at |
| S 30 (alc.). | Panama). |
| B 47 (alc.) (father insane, suicide). | S 33 d. p. catatonic (m.) (unhappy; |
| S 31 d. p. | 6 children). |
| B 35 d. p. | S 24 congenital imbecile. |
| S 22 chronic mania (affair with mar- | B 21 d. p. |
| ried man). | B 29 d. p. |
| B 45 alc. delusional insanity. | S 49 d. p. (menopause). |
| S 29 (m.) d. p. (ins. at each pregn.). | B 37 d. p. (intemperance). |
| B 29 d. p. (alc., syphilis). | S 26 d. p. (nervous prostration). |
| S 40 m. d., depressive type. | S 31 recur. mania (paresis of facial |
| B 47 involuntal psychosis (politics; | muscles since birth). |
| church fire). | B 32 d. p. |

| | | | |
|------|--|------|---|
| B 24 | chronic mania. | S 5 | epilepsy (idiot). Father, alc.;
mother, feeble-minded. |
| S 30 | epileptic d. | B 44 | epilepsy (alc.). |
| B 24 | epilepsy (meningitis). | S 36 | epilepsy (idiot). |
| S 27 | epilepsy (moron) (no convul-
sions between 7 and 20). | B 15 | epilepsy (idiot). |
| S 16 | epilepsy (imbecile). | S 15 | epilepsy (threatened suicide). |
| B 20 | epilepsy (father alc.). | S 36 | d. p. (trauma). |
| B 16 | epilepsy (moron). | B 49 | primary delusional insanity. |

HUSBAND-WIFE-SON.

| | | | |
|------|---|------|--|
| H 47 | d. p. | H 67 | paranoia. |
| W 57 | recur. melancholia. | W 52 | chronic melancholia. |
| S 31 | d. p. | H 20 | epilepsy (feeble-minded) (trau-
matism) (syphilis at 16). |
| H 29 | d. p. | W 40 | epilepsy (moron). |
| W 37 | d. p. | S 11 | epilepsy (moron). |
| H 35 | paranoia. | | |
| W 29 | d. p. (father reported insane at
times). | | |

The above statistics are only preliminary to a very much more extensive piece of work in environmental and genealogical studies which it is hoped will bring about some definite and valuable conclusions as to environment and other causes as factors in mental diseases.

In these subjects Dr. Abraham Myerson, pathologist to the Taunton State Hospital, is deeply interested, and has furnished me with the data of the Taunton State Hospital cases which are used in this paper, and has otherwise lent his hearty co-operation, although he is working in some fields along these lines into which I shall not enter.

DEGENERATIVE CHOREA (HUNTINGTON'S TYPE) WITH THE SEROLOGY OF GENERAL PARESIS.*

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In a previous article, written on Danvers Hospital material, one of us (Lowrey¹) has made a clinical report of Case I, which has also been included in Southard and Solomon's book on "Neurosyphilis" (Case No. 72). Since these reports have appeared, the patient has died, and an autopsy was performed by the junior author. The second case has recently been observed at the Psychopathic Hospital, and shows a number of very interesting features aside from the unusual combination of chorea and paresis.

Neither of these cases is justifiably to be regarded as Huntington's chorea. In neither case do we have any *family history of chorea associated with dementia coming on in adult life*, and these are the requisites for the establishment of the diagnosis; hence we speak of them as "degenerative chorea (Huntington type)," meaning thereby a chorea clinically resembling Huntington's chorea, but without a family history.

Typical cases of Huntington's chorea do not show spinal fluid changes, nor is the pathology of the condition at all clear. Such findings as have been recorded — atrophies, meningeal thickenings, etc. — are not characteristic, but common to a number of nervous and mental conditions of adult and advanced life. Rather should we look to the *locus of the lesion* for an explanation of the symptoms. The basal ganglia have been under suspicion as the locus of disease responsible for the choreic movements, and certain unpublished work of which we have knowl-

* Danvers State Hospital Contribution (No. 65) and Psychopathic Hospital Contribution, Series of 1918. Report of two cases, one with autopsy.

edge appears to prove this point. Unfortunately, the lesions in our autopsied case are so widespread that we are not able to offer any conclusive evidence on pathologic locus.

That choreatic movements may occur in paresis is well known, but receives very little attention. Kraepelin says in his textbook (Vol. II, p. 358): "Also choreatic movements can occur (in paresis). If they precede for a long time the outbreak of the disease, the possibility of Huntington's chorea has to be considered." This is all that we can find in the book about this association. Spielmeyer, in Lewandosky's "Handbuch der Neurologie," (Vol. III, p. 499), says: "Many paretics show a very marked trembling of a coarse, irregular character, that often goes over into a kind of shaking. This shaking and the spreading of the motions appears occasionally like the motion of Huntington's chorea." Nonne devotes a short paragraph to chorea (apparently the ordinary nondementing type) caused by syphilis (apparently constitutional or vascular).

Draeseke² has reported a very interesting group of cases exhibiting a combination of chorea and paresis, of the same general type as the two cases here described. In his cases there was, of course, no serologic report. He gives four cases from Ganser's clinic, together with several cases from the earlier literature.

The serologic analysis of cases usually gives a basis for differentiation of those with syphilitic etiology much earlier than is possible on clinical grounds alone (Lowrey³). This fact, together with the many syndromes now clearly established as being at times associated with neurosyphilis (Lowrey¹; Southard and Solomon⁴), indicates the extreme importance of lumbar puncture in psychopathic patients, whether there be clinical signs or not. Our cases very clearly demonstrate this point for the organic types. They also open anew the vexed question of the etiology and pathology of the choreas of advanced adult life.

CASE 1. — K. B., a female of Scandinavian descent, was admitted to Danvers State Hospital June 20, 1896, at the age of twenty-eight. An adequate history was never obtained. She had had chorea at fourteen years of age.

For about ten days she had been excited, frightened, talkative; spoke of being "bitten by serpents." Would let no one approach her for fear they were devils.

When admitted, she was hallucinated, hearing a child crying and seeing a woman carrying it away. She saw serpents, which she said bit her. Fingers and tongue tremulous; pulse, 104; physical examination other-

wise negative. A diagnosis of "acute mania" was made. (It may be noted that the hallucinations were of the scenic type, which are most common in the toxic and epileptic psychoses.)

1897. — Periods when better varied with spells of violence and periods of confusion and disturbance due to vivid visual hallucinations (angels, animals, coffins).

1898. — Further attacks.

1899. — Quiet — working in laundry.

1900. — Twitching in left arm — irregular jerking movements. Peculiar grimaces. Said to have had these for a long time. Gait irregular. Speech slow and indistinct. Demented. Irritable.

1901. — Jerking movements worse. Pupils unequal; no direct or consensual reaction to light. Knee jerks very active, left greater than right.

1905. — Jerky movements have continued. Spurious ankle clonus. Pupils gray. Vision unimpaired. No pupillary reaction to light.

1906. — Temperature. Loud systolic murmur heard. Rhythm irregular. Accentuated aortic second sound. Arteriosclerosis. Albuminuria.

1907-1910. — General condition good. Continues choreatic; disoriented; amnesic.

1913. — Dysentery with recovery. Pupils stiff.

1914. — Partially oriented. Hears "water running in ears." Choreatic movements marked. Heart examination negative. Pupils react to light and distance.

1915. — Demented, deluded, confused.

1916. — Disoriented, memory defect, speech difficult, marked chorea. "Is a typical case of (Huntington's) chorea. The gait is extremely unsteady. Knee jerks exaggerated. There are constant coarse, involuntary movements of the hands, head, facial muscles and tongue. There is considerable dementia. The pupils react."

At this time we did blood Wassermann tests on all of the patients in the colony group where the patient was cared for. The blood Wassermann was positive, so the spinal fluid was examined. The Wassermann was positive; there was albumin and globulin excess, 3 cells; gold, 4444555321.

In December, 1917, the chorea was marked. There were several burns from rolling against the radiator. Demented. Speech difficult.

Summarized, we have a case with a confused, hallucinated, excited condition coming on at twenty-eight years; with onset of choreatic movements at about thirty-two years. Dementia came rather early. For several years the pupils apparently did not react — when seen by us the reaction was fairly normal. For years — at least fifteen — the clinical picture was that of a degenerative chorea. It was only by accident that the paretic serology was discovered. Even then, careful study did not show any clear-cut symptoms of paresis.

The patient died Jan. 8, 1918, of arteriosclerosis and broncho-pneumonia. The autopsy was performed five days post mortem (C. E. S.). There were emaciation (length, 148 centimeters, weight, 34.8 kilograms), scars of burns, irregular pupils, signs of senility, enteroptosis, perimetritis, coronary and general arteriosclerosis with calcification, valvular sclerosis, chronic myocarditis, adhesive pleuritis, broncho-pneumonia, hypostatic congestion, chronic nephritis, small adrenal hemorrhages.

Head. — Scalp thin and not adherent. Calvarium: F. 8; T. 5; O. 6. Slight generalized thickening of dura. Congestion of subpial vessels. Milkiness of pia over vertex; less marked laterally and on base, except that over the orbital surface of frontal lobes the pia is markedly thickened and gelatinous. Brain weight, 1,420 grams. Generalized softening of brain (post mortem).

The brain was hardened in 10 per cent formalin, and after external photography (Figs. 1 and 2) the hemispheres were divided. The appearance was very striking (see Figs. 3 and 4). The fornix was not to be discovered, and the structures involved in the wall of the third ventricle were much eroded, as were the walls of the lateral ventricles, the optic nerve and midbrain. A part of this is undoubtedly due to post-mortem change. On coronal section there is rather marked internal hydrocephalus. (The erosion shows very plainly.) The brain structure is not especially altered otherwise, except for the absence of fornix, septum lucidum, etc. (Figs. 5 to 8.) The basal ganglia are possibly somewhat small, but not otherwise abnormal. The posterior and descending horns of the lateral ventricles are partially filled with a gelatinous, gray material which is adherent to the wall and resembles somewhat gummatous exudate. There are no other signs of gumma.

The gross brain findings are for the most part typical of paresis, although the gummy exudate and internal destruction are not.

In sections from various cortical areas (right and left frontal, precentral, postcentral, temporal and calcarine) we find parietic lesions — infiltrative meningitis, and in the cortex, perivascular infiltration, gliosis, degenerated cells, satellitosis, and capillary proliferation. Exudative cells are present in some areas where no vessels can be made out. There is, in some sections, a striking thickening of the vessel walls, occasionally with hyaline changes, resembling ordinary arteriosclerosis except for the perivascular infiltration. Irregularly distributed cell loss is very marked.

Sections were also taken from right and left caudate and lenticular nuclei, thalamus, red nucleus, dentate nucleus, medulla, and spinal cord.

Examination of the sections from the basal ganglia shows fairly well-marked perivascular infiltration; marked thickening of the vessel walls; accumulation of mononuclear cells in the lumen of some of the small vessels; marked cell loss; satellitosis; gliosis; in some areas large numbers of thickened vessels. In some sections, particularly in the thalamus, there is marked pigmentation of nerve cells. (Figs. 9, 10 and 11.)

Our material does not allow us to say anything regarding differential

locus of lesion, — rather the lesions are very widespread, involving all of the corpus striatum, cortex, bulb and cord. Hence it offers little of value in establishing the true pathology of degenerative chorea.

A striking point is the marked hyaline thickening of the vessel walls, resembling thus the vascular type of syphilis rather than the paretic. However, with the cell degeneration and losses, gliosis and meningitis, it seems clear that the lesions are at least of a mixed type, with more evidence in favor of paresis. In view of this, the unusually long course of the disease is of great interest and of therapeutic importance, since the benignity of the process indicates that it would respond well to treatment.

Accordingly, we may summarize the pathologic findings by saying that there was an atrophic brain, with meningitis, internal hydrocephalus, gummy exudate in the ventricle; and a microscopic picture of a rather mixed type, but with more evidence for paresis than vascular syphilis.

CASE 2. — E. S., a widow, sixty-eight, of American descent, was admitted to the Psychopathic Hospital on Jan. 21, 1918; said to be depressed with suicidal threats and periods of excitement. She had not slept well, was said to shout and cry out all the time, and wanted to be shot dead or allowed to go out and drown herself.

The history was given by a daughter. Patient's maternal grandfather died in a hospital for the insane. He is said to have been periodically insane. The attacks of mental disturbance, thought to have occurred about once a month, were very violent. The maternal grandmother was a "little queer" as she grew older. The father, a nonalcoholic stonecutter, who had deserted his family and lived with a woman to whom he was not married, died at about fifty years of age of cerebral hemorrhage. The mother died at eighty-two, of cerebral hemorrhage. One of her brothers was a "little queer." One maternal aunt was for forty years in insane hospitals, with periods of apparent recovery when she was at home. The twin sister of this aunt was queer for many years, but was not in an institution. A maternal cousin has had attacks of mental illness, thought to be similar to that of the patient. His sister is reported to have had a similar trouble.

Of the siblings, the patient is the oldest. A brother is a periodic drinker, who says the impulse comes to drink and he can't help it. Probably has had delirium tremens. Another sister died of scarlet fever.

Patient was born in 1850, grammar school education. Always a great reader; of normal habits. She always worried, was very apprehensive over trifles; not much depression; fairly social; self-willed; not much interested in the welfare of people outside of her family. She has been twice married. First husband died of appendicitis, the second husband was alcoholic. He died about sixty-four, of "paralysis of the insane," at a State Hospital where he had been about three years. The oldest son, at

the age of thirty-two, had some trouble with his legs; could not walk. Recovered after treatment. Nonalcoholic; engineer. Two daughters are not in good health. One is very nervous; the other has uterine trouble.

At fourteen, the patient had typhoid fever, and is said to have been delirious. Has had more or less "rheumatism" for many years. Since the birth of her child, thirty-seven years ago, patient has been subject to diurnal (never nocturnal) incontinence of urine under excitement or physical exertion. No syncope.

About four years ago, the patient had an attack of what was supposed to be pertussis, and began to fail in health. She could not hold her artificial teeth in place; occasional "twisting of the face," unaccompanied by other symptoms, was observed. A little later she became very slovenly and unclean. It became difficult to persuade her to change her clothing after incontinence. Steppage gait at times for two years. She had been restless; constant movements of the hands; no difficulty in grasping or holding objects; no vision in one eye for a year. For about a year has talked of poverty; said her daughter did not have enough to eat. At times would go to bed "to die," saying that she could not live another minute. "I am all gone, you can see." At times she showed considerable temper. Has been worrying about her granddaughter, saying she has nothing to eat and nothing to wear. Of late has become clean about her person.

Three days before coming to the hospital, patient said she was about to die, became very excited, stamped and "hollered," got out of bed, asked why she should have a comfortable bed while the others were freezing. Two nights later, she was up all night, laughing and talking so that she disturbed the neighbors; having been quiet in the interval. She often threatened suicide, did not attempt it. Her doctor had advised that she be sent to a hospital a year ago, and with her spells of violence, this was done.

On admission, it was stated that the patient had been depressed for about six months at the time of her husband's death. Following that she became active and talkative and of late has become quite incoherent; often quite excited, striking her relatives. She called herself a "crazy old woman;" said she was too dirty to be allowed to remain here.

On examination, many coarse, choreiform movements were observed of the limbs, face, tongue and trunk. They were rather more marked in the lower than in the upper extremities, and resembled, very closely, the coarse, unco-ordinated movements of Huntington's chorea. At times she was quiet and agreeable, at others cross and irritable. At times somewhat depressed. She was not very accessible to questioning, usually because of her irritability. If crossed, she would become very noisy and disagreeable, throwing herself about, but for the most part was fairly quiet. She was fairly well oriented, could give the day and date, place and persons.

No satisfactory account of her recent experiences could be obtained.

She had no knowledge of current events. Was able to give the history of her early life fairly well. Her school knowledge was poorly retained.

At one time she thought she was going to die; that all about her were going to die; that she was put here so her daughters might be rid of her. Knew that her daughters were starving to death; that the children would be killed. Became excited and much agitated over this. Seemed greatly worried by the sorrows and poverty of the world. At times she was very confused in her thinking and her answers; did not realize her own condition.

Physical examination showed that she was somewhat emaciated. Skin dried and atrophied. Some ecchymosis. Diminished hearing, especially on the left. No vision in the right eye. Ptosis of the right eyelid and external strabismus. The right pupil was irregular, and *neither pupil reacted to light or accommodation*. Slight clouding of the right cornea. Absent teeth. Marked twitching of the muscles of the face and fingers. Lower jaw continuously in motion. Gait unsteady and swaying. Positive Romberg. Knee jerks active. Co-ordination fairly good. (In other words, general choreiform movements.) The heart was of normal size. Sounds of good quality. Pulse, 88. Blood pressure, 120-70. Lungs negative. Abdomen negative. The urine was negative, except for some bacteria and white cells. The Wassermann reaction, on serum, was negative — (two tests) and on the spinal fluid unsatisfactory, because of contamination. However, the spinal fluid showed globulin excess, 11 cells, and a gold reading, 5444433332, on the first examination; and globulin excess, albumin excess, 15 cells, and a gold reading, 5443333221, on a second test. Two further Wassermans on the blood serum were negative, but the Wassermann test on the spinal fluid was positive and all the other tests were similar to those already reported.

Here, then, we have a family history of cerebral hemorrhages; (probably) manic depressive psychosis and periodic drunkenness, but none of chorea. Probably of more importance is the history of paresis in the husband. The patient was apparently of good makeup — not cyclothymic. Choreatic movements and deterioration seem to have begun at the same time. At the time of our examination the case might easily have been taken for Huntington's chorea, although irritability, depressive ideas, and conduct disorder were much more marked than is usually the case — indeed the case at times seemed like a mixed manic-depressive condition. The only sign for paresis was the pupillary reactions, and it is well known that pupils that are *stiff to both light and accommodation are not diagnostically absolutely significant of paresis*.

However, the serologic evidence leaves no doubt that in this case we have to do with a case of neurosyphilis. Granting this,

then the dementia and conduct disorder and choreatic movements are all to be explained on the same basis. In the light of experience, and especially in view of the active mental symptoms, we hold to the opinion that this is a case of general paresis. It is desirable to treat the patient according to modern methods and ascertain the results. The case also demonstrates clearly the fallibility of depending on a blood Wassermann alone for evidence of neurosyphilis.

SUMMARY.

Two cases are presented in detail. One, originally diagnosed acute mania, showed choreatic movements and dementia for eighteen years before death, the serology of paresis being discovered two years before death. The autopsy shows characteristic lesions of paresis plus endarteritic changes; general cell devastation and gliosis, perhaps more marked in the basal ganglia; and certain changes of an uncertain character (in part post mortem?). We cannot determine the locus of lesion from our material.

The second case seems to represent a case of conjugal paresis; with chorea and dementia for about four years, with marked conduct disorder and certain depressive ideas. With the exception of the negative blood Wassermann, the serology is typical for paresis.

We believe that such cases prove the importance of performing spinal fluid tests in all psychopathic patients — certainly in all with any organic disease.

Choreatic paresis is apparently rare, judging by the small numbers of cases reported, and these are apparently the only cases in the literature in which serologic tests have established the diagnosis.

Apparently, the prognosis for duration of life is good; intensive therapy should accordingly yield good results.

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EXPLANATION OF FIGURES.

FIG. 1. — Basal surface of the brain. Note the thickening of the vessels. The pontine softening does not show well. Some meningitis seen. Mag. ca. 0.7.

FIG. 2. — Vertex. Shows the moderate meningeal thickening. Mag. ca. 0.7.

FIG. 3. — Median surface of left hemisphere. Mag. ca. 0.7.

FIG. 4. — Median surface of right hemisphere. Mag. ca. 0.7.

Very striking is the absence of the fornix and septum lucidum, so that one looks directly into the lateral ventricle. The irregular, eroded surface of the wall of the ventricles shows fairly well. The corpus callosum is somewhat thinned centrally, implying a loss of association fibers. The appearances in the temporal lobe are related to the internal hydrocephalus affecting the descending horn of the lateral ventricle. Note particularly the great thinning and erosion of the optic nerve, shown at X, Fig. 4. Mag. ca. 0.7.

FIGS. 5, 6, 7, 8. — Coronal sections at interval of 1 centimeter through the extent of the ventricles. Mag. ca. 0.7.

These sections show the internal hydrocephalus very well. The apparently more marked condition on the right is due to slight variation in the level of section in the two hemispheres. The basal ganglia are perhaps somewhat small and vessels are rather numerous, but there are no obvious gross lesions. The roughness of the ventricular walls is apparently in part due to post-mortem changes. The absence of the median interventricular structures produces a rather striking appearance. In Fig. 6, upper section, note thinning of optic nerve at X. The cortex is apparently of normal thickness. The gray gummy exudate in the posterior horn shows in Fig. 8 in the left ventricle. No other areas of degeneration found in these sections.

FIGS. 9, 10, 11. — Photomicrographs showing lesions. All sections are from the thalamus.

FIG. 9. — The mononuclear cell exudate in a perivascular space. A vessel takes up the majority of the picture. This contains red cells. In the perivascular space are the exudative cells. Mag. ca. 250.

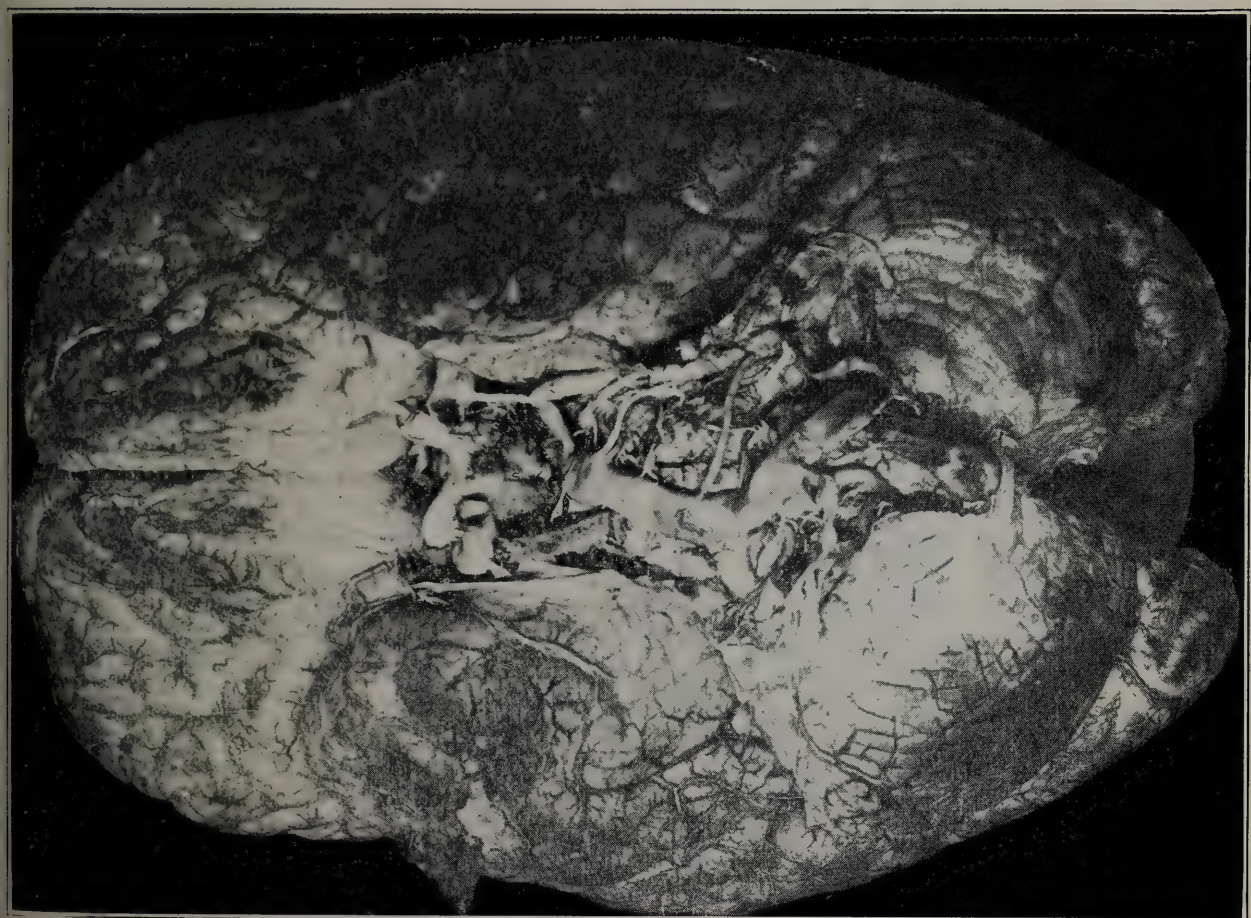
FIG. 10. — To show the hyaline thickening in the wall of the vessels. The three vessels above show this quite well. The larger vessel below is very thick walled, but not well shown. Mag. ca. 100.

FIG. 11. — An area showing the paucity of cells and gliosis, chiefly of the fibrillary type. Mag. ca. 200.

Fig. 2



Fig. 1.



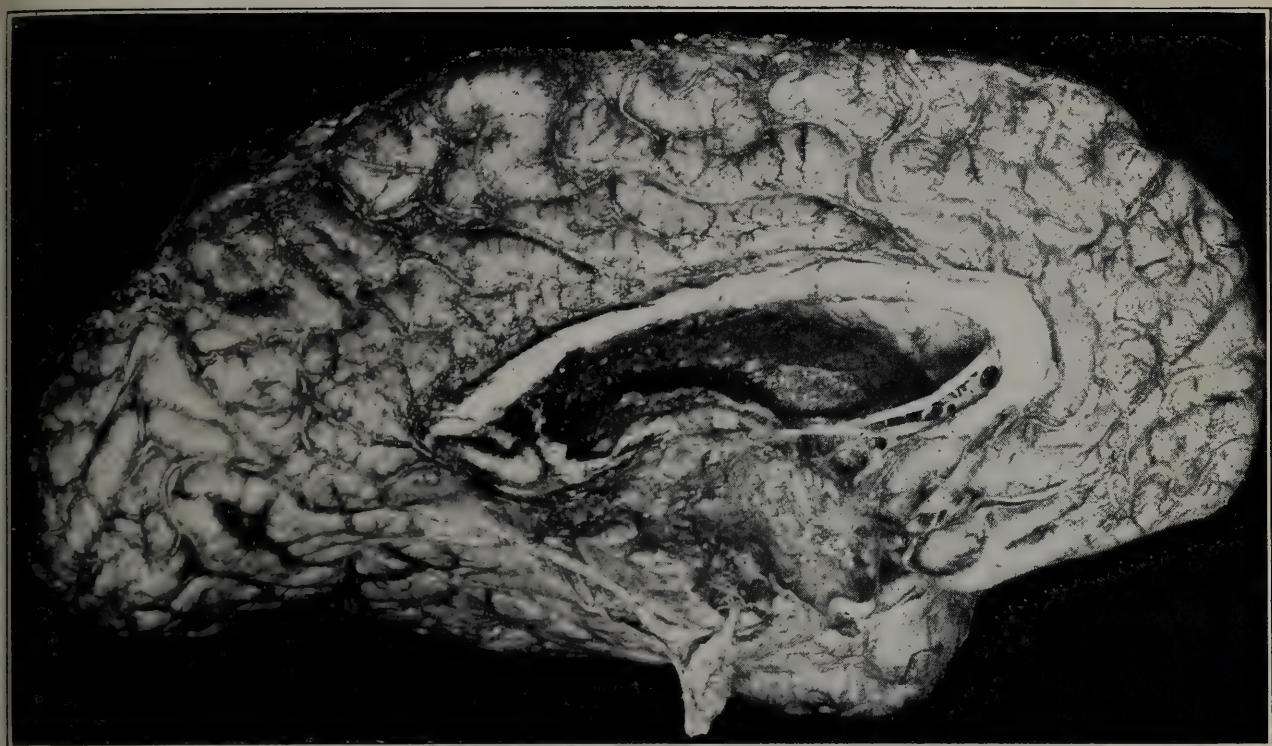
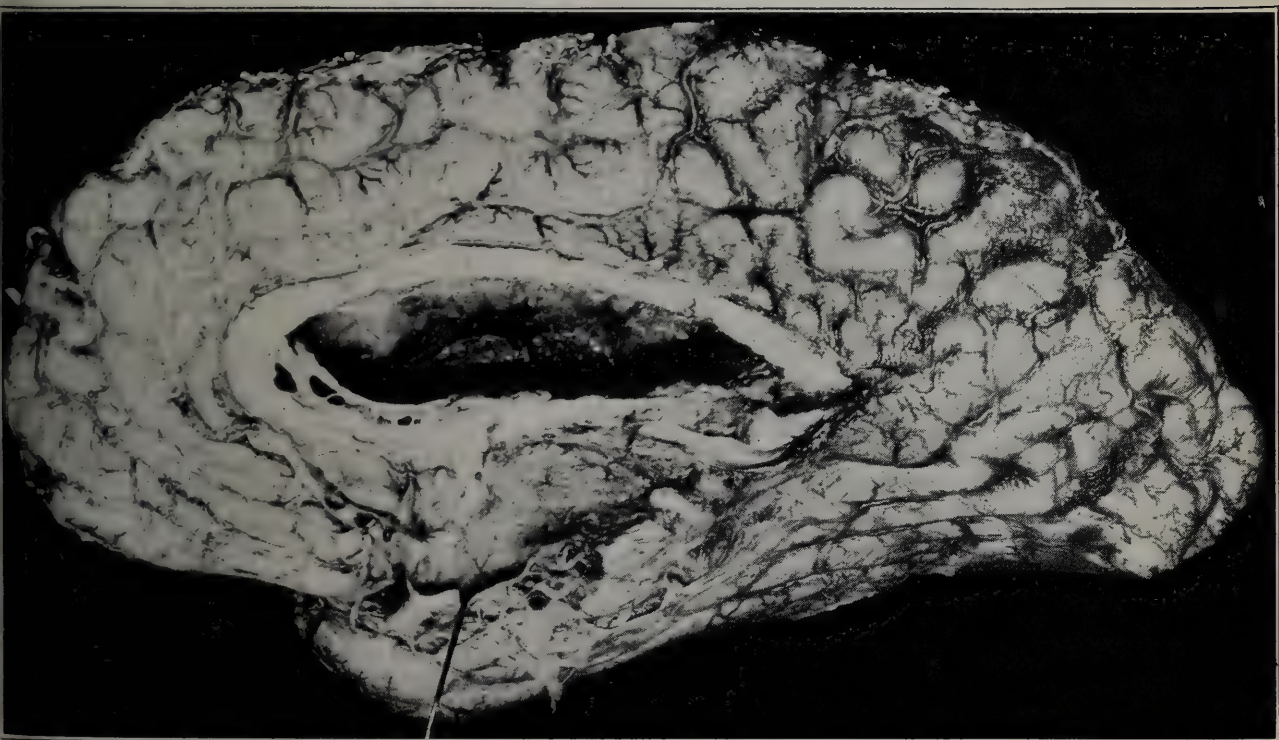
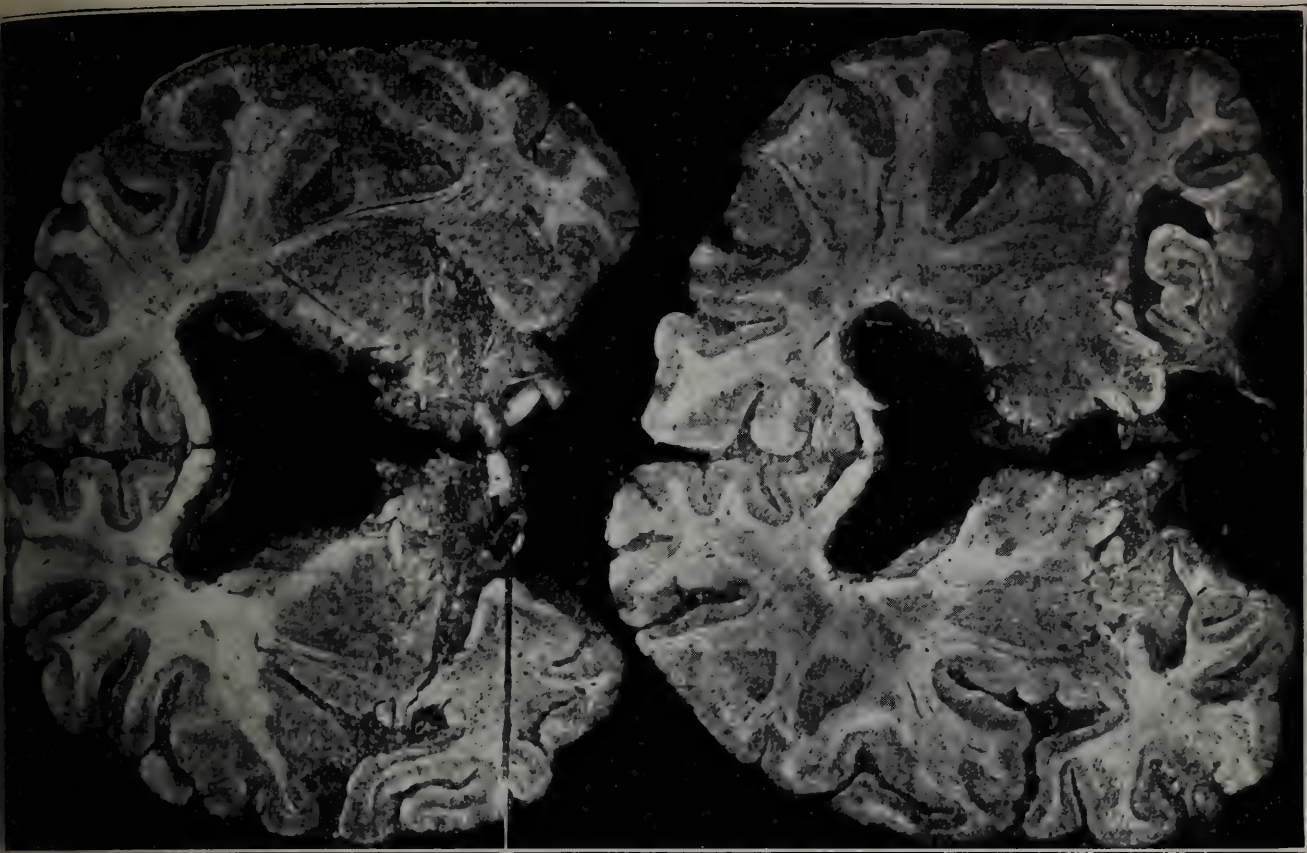


FIG. 3.

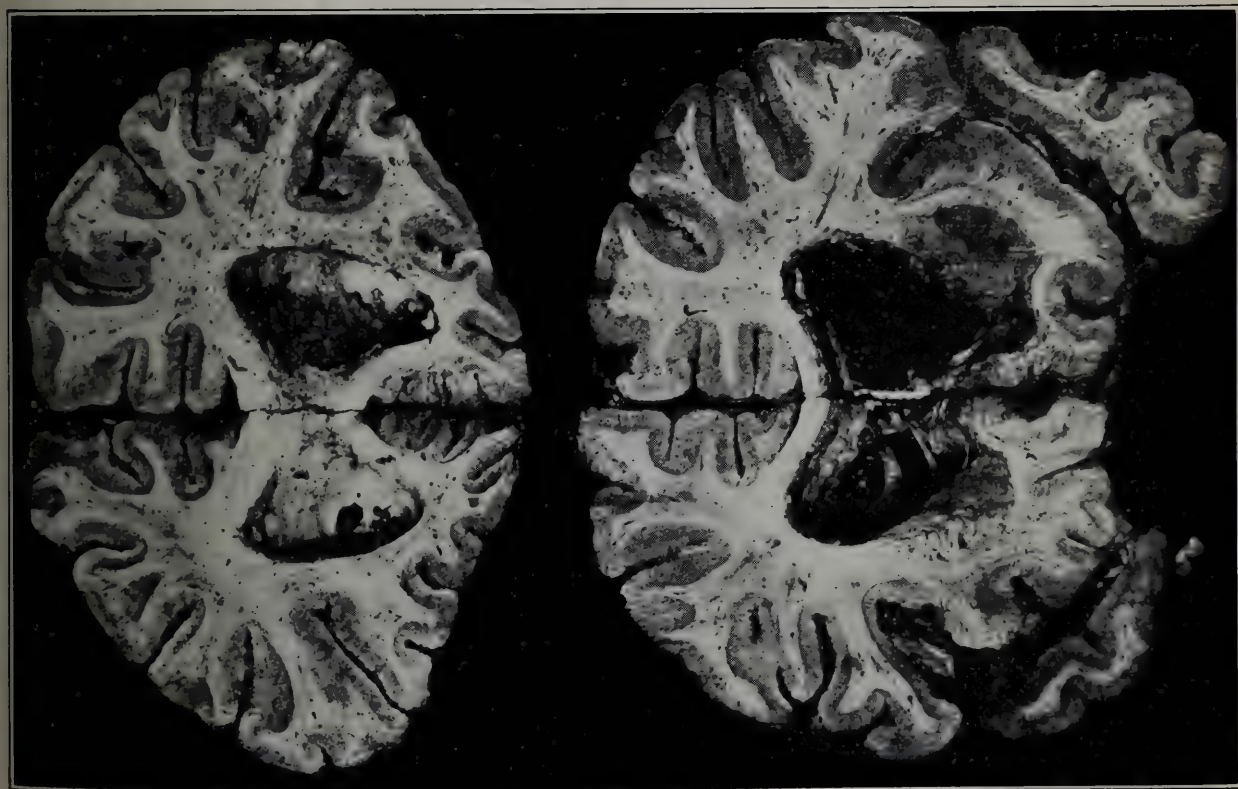


X

FIG. 4.



X



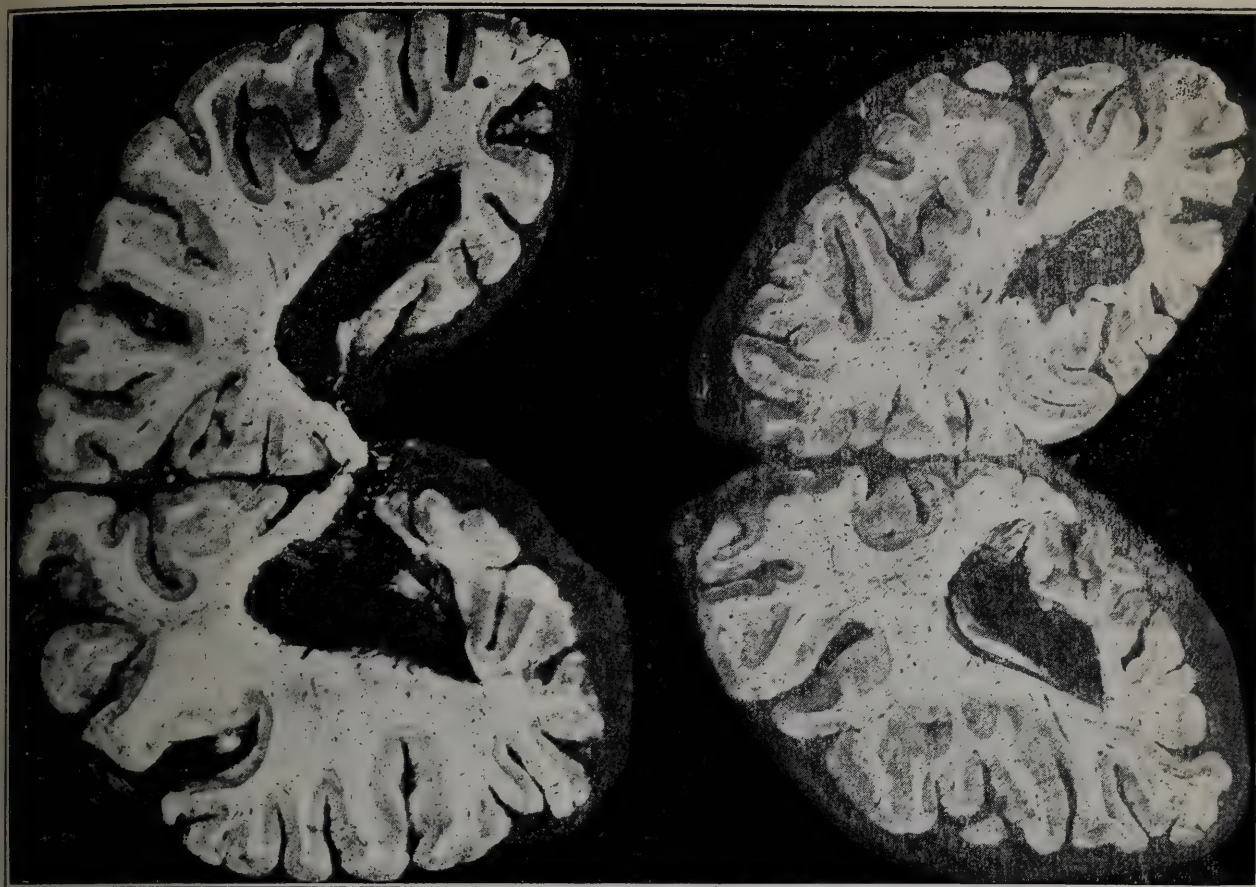
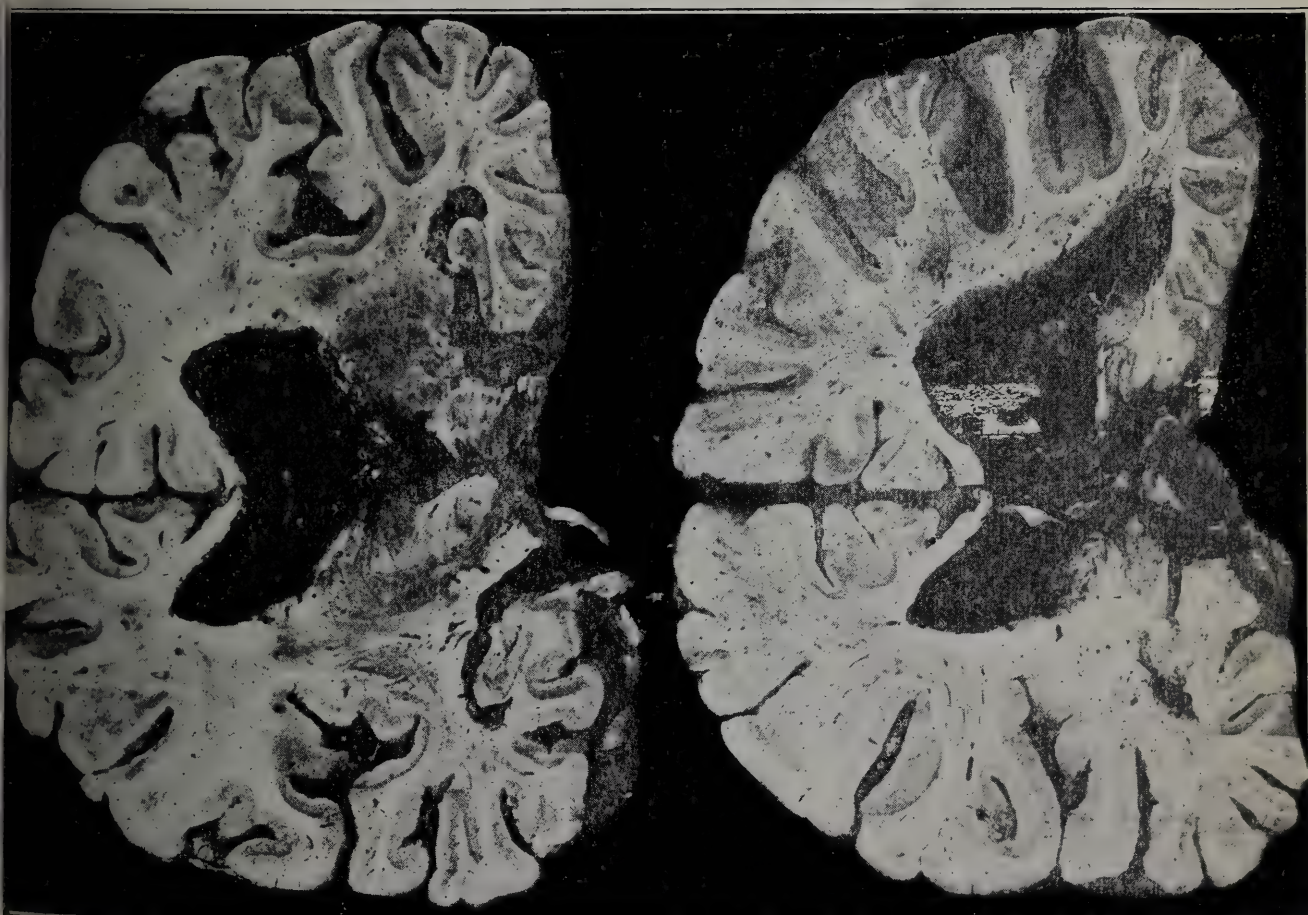


FIG. 8



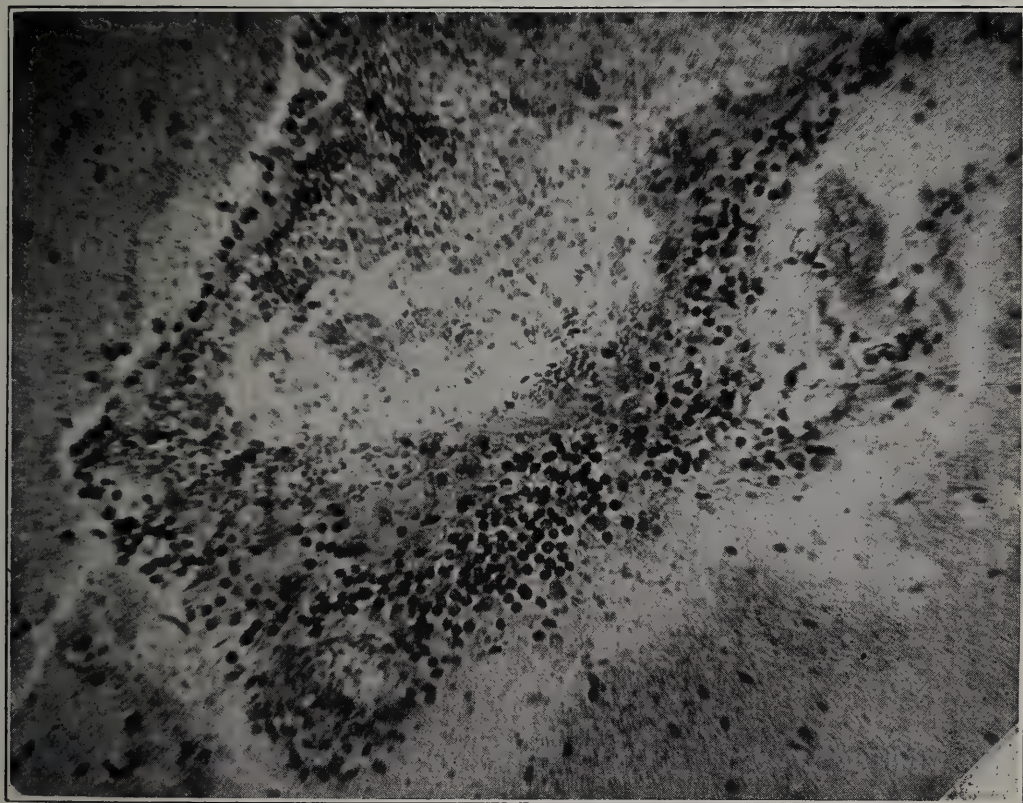


FIG. 9.

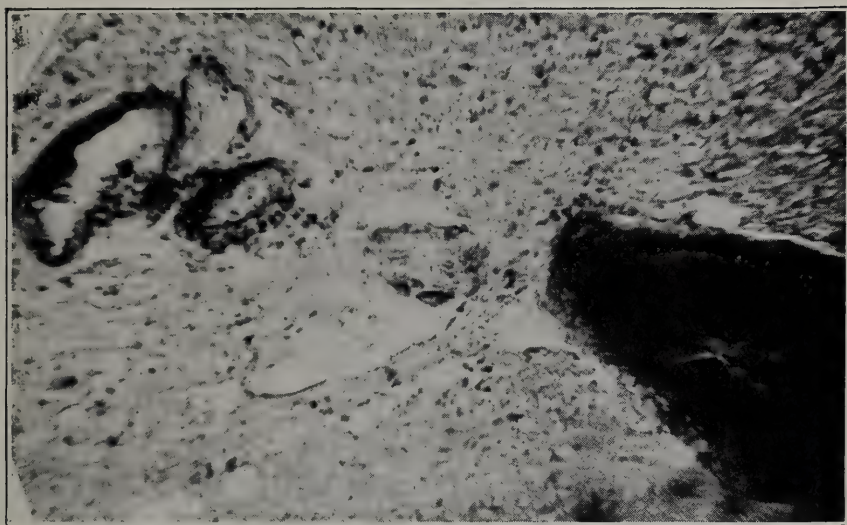


FIG. 10.

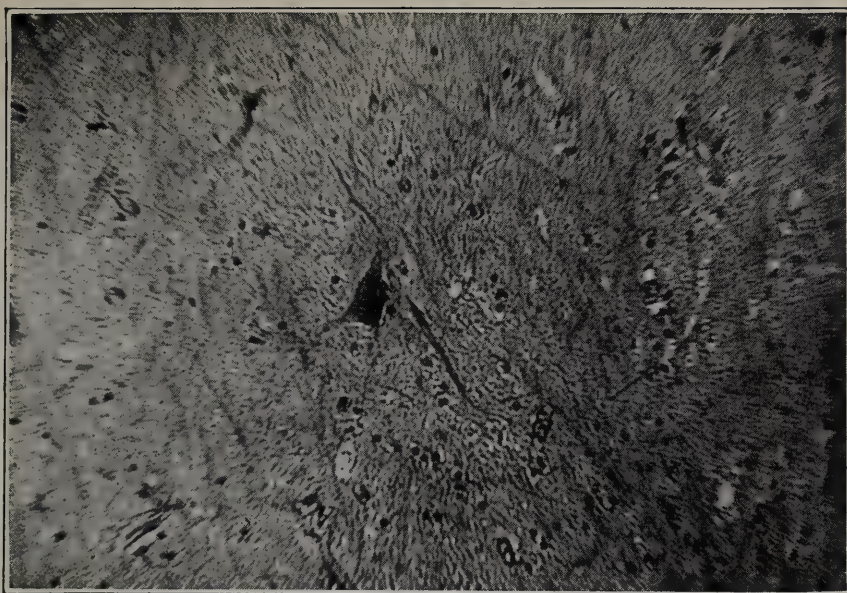


FIG. 11.

THE GENERA IN CERTAIN GREAT GROUPS OR ORDERS OF MENTAL DISEASE.*

BY E. E. SOUTHARD, M.D., BOSTON.

I want to present to the American Neurological Association certain amplifications of material presented in 1917 as a key to the practical grouping of mental diseases. Under the eleven groups of mental diseases defined in 1917, I wish to place such practical subdivisions as seem to me confirmed by American psychiatric experience.

As I find that many persons hardly distinguish between a classification and a key and labor under the impression that I am trying to erect a novel classification of mental diseases, let me insist that I am proposing nothing but a key to the classification of mental diseases according to the entities which I find in common diagnostic usage. I am elsewhere insisting on the extraordinary unanimity which American psychiatrists are now displaying on the matter of psychotic entities. There is, in fact, hardly enough controversy to indicate a healthy progress in the matter of theoretical psychiatry. (There is, to be sure, one large controversy concerning the nature and dimensions of psychogenesis and the part it may play in sundry mental diseases; but this controversy has to do with more general aspects of psychiatry than the question of its contained psychotic entities. Nothing is more hopeless than a discussion, for example, of psychogenesis in dementia præcox when the controversialists do not agree as to the clinical symptomatology of the cases under discussion.) This unanimity of view as to the psychotic entities of modern psychiatric science is so marked that a committee of the American Medico-Psychological Association has been able to formulate an acceptable list of such entities now in process of adoption by most of the institutions for the insane in the country. The progress in mental hygiene secured by this universal adoption of a list of psychotic entities is certainly a subject for congratulation.

* Read in abstract at the annual meeting of the American Neurological Association, Atlantic City, N. J., May, 1918.

PURPOSES OF THE AUTHOR'S INVESTIGATIONS.

What I have been attempting of recent years on the basis of the diagnostic sifting-machine material afforded by the Psychopathic Hospital is to study the logical processes of psychiatric diagnosis and to find, if possible, some simpler ways in which to arrive logically at one or other of the psychotic entities which we virtually all agree on.

I have placed some larger considerations on this matter of the "process-types" of diagnosis in a paper read this year before the Association of American Physicians, published in the "Journal of Clinical and Laboratory Medicine." The paper is entitled "*Diagnosis per Exclusionem in Ordine*: General and Psychiatric Remarks." I do not need to rehearse the points of this paper before the American Neurological Association. I was, in fact, trying to read something of a lesson to the diagnosticians of the eminent internist group represented by the Association of American Physicians, calling to their attention the need for more elaborate logical methods of approach to diagnosis in psychiatry than in many branches of medicine. Some of the elders among the internists had for years denounced the method of diagnosis by exclusion; one of them said that the method was bound to fail because of our ignorance of pathology and went on to say that diagnosis by exclusion was a tedious method. Of course tediousness ought not to stand in the way of accuracy, and pathology is bound to remain imperfect for many decades, not to say centuries. The fact is that in fields of diagnosis where there are no indicator symptoms, the method of diagnosis by exclusion is unconditionally necessary; for, in the absence of an index of differentiation or indicator symptom (or "presenting symptom" as Dr. Richard Cabot sometimes calls it), the diagnostician is bound to take into account all forms of mental diseases when he is trying to eliminate and differentiate the particular psychosis displayed by his patient.

Hence, I went into some detail in the paper mentioned, on a method of diagnosis which I called *diagnosis per exclusionem in ordine*. The central part of the idea had already been presented in the paper, entitled "A Key to the Practical Grouping of Mental Diseases," presented before you in 1917.

The advance which I want to make this year is implicit in the method of the key presented last year. Last year I suggested that the tyro in diagnosis might well consider and exclude in se-

quence the great groups of mental diseases A, B, C, D, etc. I put A before B, B before C, etc., simply because the methods of diagnosis in Group A appealed to me as more certain, practical and general in their scope than the method available for Group B; the same for the methods of Group B as against those for Group C, etc.

This year I want to set down the subgroups of mental diseases which it seems to me practically all of us admit exist (if we admit that any entities whatever exist), in a proper diagnostic order. I want to extend the principle of orderly diagnosis, that is, of *diagnosis per exclusionem in ordine* (genera) under groups (orders, in the botanical or zoölogical sense). Now I must acknowledge at the outset that the further we go into detail, the less unanimity must *à priori* be expected in the psychiatric world. Accordingly, I would concede that my proposals are bound to be far less acceptable in their details than the proposals in the more general key to the main orders of mental diseases presented in 1917, but if the principle of exclusion in order be accepted for practical diagnosis, then I shall have no quarrel with those who feel that the entities are too many, too few or even non-existent.

IMPORTANCE OF GROUPING DISEASES.

One more general remark: I feel that the history of modern developments in logic indicates that the part of order is the one part which has undergone great developments in recent years. We have discovered that though we cannot always measure things, we can sometimes put them in order unmeasured. It seems to me that the development of orderly diagnosis is quite on the carpet for modern workers. It may not be superficial to say that expert diagnosticians may not need to employ the method of diagnosis by exclusion in order simply because the facts in a given case may immediately suggest to them (by processes of mere inspection or of very rapid comparison) the right diagnosis. Time and again, however, the best experts fail in their attempt to apply the methods of diagnosis by inspection and by comparison, and surely the inexpert youthful psychiatrist needs some key to guide him. How frequently in the clinic do we find that the youthful diagnostician is by very little emphasis here and there able to press the phenomena of his case either into the dementia præcox or the manic-depressive group or into the senile or the focal brain disease group, respectively. The point of this difficulty lodges in the fact that there are practically no indicator

symptoms in mental diseases, and actually any symptom you may specify is quite able to lead you in any one of the main diagnostic directions. Let a young diagnostician of the dogmatic or slightly paranoid type get the initial idea that a case belongs in the dementia præcox group, he will be able to defend his thesis against all comers by the use of symptom lists founded on the very best textbooks; in fact, the better the textbook, the easier for the young tyro to carry his point — for the time being.

Following are tabulated suggestions for the generic classification of mental disease groups, each group followed by some general remarks: —

I. SYPHILOPSYCHOSES* (the syphilitic mental diseases): —

Genera: —

General paresis.

Juvenile paresis.

Nonparetic forms: —

Meningitis.

Vascular.

Gummatous.

Less common genera: —

Syphilitic feeble-mindedness.

Syphilitic epilepsy.

Tabetic psychoses.

Syphilitic paranoia.

Atypical.

Of course, the syphilopsychoses are by no means coterminous with neurosyphilis. The term neurosyphilis, generally taken, must be supposed to include both the syphilopsychoses and the syphiloneuroses. The systematist will find a certain difficulty in placing many forms of neurosyphilis among the psychoses and the neuroses, respectively. We are here dealing with the psychoses, and our classification does not include the neuroses.

If one were asked how to distinguish the syphilopsychoses from the syphiloneuroses, one would have to reply on practical grounds that, if the case showed psychotic symptoms, it should be placed among the psychoses even if there were also present, as is usually the case, a number of neurotic symptoms. In short, owing to their practical significance, psychoses might be supposed to have the first call in classification as against neuroses. On this account

* Re syphilopsychoses: Dr. Solomon and I in a recent case book tried to bring order into the nomenclature of neurosyphilis by reducing the main forms thereof to (a) paretic; (b) tabetic; (c) diffuse; (d) vascular; (e) gummatous; (f) juvenile.

the disease commonly known as general paresis would fall among the syphilopsychoses, despite the existence therein of any number of symptoms pointing to nonpsychical part of the nervous system. On the other hand, the disease commonly known as *tabes dorsalis* would best be placed among the organic neuroses, despite the appearance in *tabes* from time to time of a few mental symptoms. If, however, a case of *tabes* develops symptoms of a paretic nature, then the common rule is to term the case one of *tabo-paresis*. If in the course of the *tabes* certain characteristic excitements with hallucinations appear, then we have a rare entity known as *tabetic psychosis*. I am not sure that there has even been a well-established case of this disease, *tabetic psychosis*, in the Psychopathic Hospital clinics among 10,000 admissions. So much for the general relation of the syphilopsychoses to the syphiloneuroses.

The issue is a practical one, and decision is made on the appearance of psychotic symptoms in the case. If these dominate the scene, then the case should in my opinion be termed *syphilopsychotic*. Of course, if the syphilitic infection precedes and in a psychogenic way occasions a neurasthenia, then, from this point of view we should not be dealing with a case of *syphilopsychosis*, but with a case of *psychoneurosis*. If, as in one of the war cases, a syphilitic infection appears to bring about an epilepsy, we are not dealing according to this grouping with an epilepsy which is syphilitic, but an epilepsy presumably brought about in some psychogenic way and only indirectly due to the operations of spirochetes. These two exceptional diseases might be then named *psychoneurosis syphilogenica* and *epilepsia syphilogenica*, in which we place in the adjective the exciting factor and place in the abstract noun the general nature of the disease in question.

Syphilopsychoses, then, are diseases in which the psychosis is essentially spirochetel. Where the spirochete acts after the fashion of an occasioning factor, it would seem wiser in the interests of the patient to place the disease elsewhere.

A note on the order in which the genera under the syphilopsychoses have been placed is in point. I have placed, in the foregoing grouping, general paresis first because it seems to me that the means for its diagnosis are more exact and reliable than the means for the diagnosis of the other forms of syphilopsychosis.

I have placed juvenile paresis second, hoping that the syste-

matic examiner of cases of this group will consider very early in his logical work the question of congenital neurosyphilis. It has seemed to us at the Psychopathic Hospital that a good many errors in diagnosis have been made by the lack of consideration of congenital factors. These errors do not stand out so strongly in district State hospital material as in Psychopathic Hospital material.

The third genus or group of genera under the syphilopsychoses is constituted by the nonparetic forms. Despite the difficulty of the mutual differentiation of this group, I am inclined to separate the genera as indicated into meningitic, vascular and gummatous. To define a genus through negative features is a device which should not be resorted to except in extremity. Accordingly, I hold that the diagnosis cerebral syphilis, cerebrospinal syphilis, as made in many of our clinics, is as a rule, no more exact than the more general diagnosis neurosyphilis. When this diagnosis is rendered, there are often no prognostic data available. As a matter of fact, as pointed out by Solomon and myself in the book previously mentioned, much damage may be done to a patient by terming him either general paresis or cerebrospinal syphilis at a time when it is strictly impossible to tell to which genus of the order syphilopsychoses the patient really belongs. At a little later stage in diagnosis, when more data have been collected, it is virtually always possible, especially with the laboratory data now available, to indicate whether one regards a case as meningitic, vascular or gummatous. Why, then, should we stop with the diagnosis "cerebrospinal syphilis," which amounts to little more than the statement that a man has either syphilopsychosis or syphiloneurosis, when we can profitably permit ourselves a generic diagnosis which may, indeed, practically help the patient a good deal.

Accordingly, I hold that general paresis, juvenile paresis, meningitic, vascular and gummatous syphilopsychoses form fairly well-recognized genera in the order of syphilopsychoses. I do not propose a nomenclature, however, for these genera, hoping to excite a critique on the matter.

In addition to these five more or less readily distinguished genera under the order syphilopsychoses, there are a number of less common ones.

Shall we term syphilitic feeble-mindedness a form of feeble-mindedness or shall we term it a form of syphilopsychosis? According to the general principles of diagnosis by exclusion in order

and in the pragmatic and therapeutic interest of the patient, I very much prefer to have the disease classified under the syphilopsychoses. Group II, that of the hypophrenias, is made to include practically all kinds of feeble-mindedness which have been defined. Why, then, should we not speak of a hypophrenia syphilitica? Would it not help the specialists in feeble-mindedness so to classify their material? From that more limited standpoint I should agree that hypophrenia syphilitica might be a proper term for the somewhat rare disease, but from the standpoint of neurologic clinics, neurologic and psychiatric clinics, district State hospitals, psychopathic hospitals, I would still think it best to insist on the pragmatic side of the situation by regarding this disease as one amongst the syphilopsychoses. It might be termed neurosyphilis hypophrenica.

Identical considerations hold for syphilitic epilepsy; in fact, it seems to me that the considerations are here stronger; for it is certainly much more definite to term a condition neurosyphilis epileptica than it is to call it epilepsia syphilitica. From the more limited standpoint of the epileptologist, of course epilepsy syphilitica may approve itself, but epilepsy is so much broader and vaguer a concept that it seems to me highly worth while to place all cases of epilepsy regarded as syphilitic in origin among the cases of neurosyphilis.

I called attention in the foregoing to one of the war cases in which the acquisition of a syphilitic infection brought out an epilepsy: that case presumably belonged neither in the syphilopsychoses nor in the epileptoses, but rather among the psychogenic cases which we relegate to a much lower place on the scale. Such a case might very possibly be classed in the genus hysteria, of the order psychoneuroses. If we hold the diagnostician down in such a case to an exact definition of what he means by making him specify the genus or order in question, we shall greatly improve our logical technic in diagnosis. For instance, is the case one of syphilopsychosis epileptica? Then we would suppose that the spirochetes were in some way acting on the brain so that a true epilepsy hardly distinguishable from sundry other organic forms was being produced. Or, is the case one of hysteria epileptica or hysteria epileptoides in which the adjective conforms with the degree of doubt concerning the observed phenomena themselves? Under the latter circumstance a quite different genesis is to be suspected at work. But, you will reply, how often are we unable to tell which form of genesis is in play? Quite

right, one must reply, but until one knows what form of genesis is in play, the true or indicative diagnosis, the really pragmatic diagnosis which will help treatment, has not been rendered.

It seems to me that the diagnostic sheets and statistical tables of many clinics are full of these hedging diagnoses.

As for other less common genera, tabetic psychosis and syphilitic paranoia, something has been said in the foregoing concerning tabetic psychosis (note again that we do *not* mean by tabetic psychosis that subform of general paresis called tabo-paresis); and I shall not delay on syphilitic paranoia, an exceedingly rare genus if it occurs at all.

Under the term atypical, as under other orders of mental disease, I propose to leave room for syphilitic mental diseases of doubtful or hitherto undefined nature, for it is no part of the present endeavor to enumerate and fixate a nomenclature for the psychoses. As in several places stated, I am simply trying to take the groups which modern clinics recognize and place them in a practical diagnostic sequence.

II. HYPOPHRENOSSES (the feeble-mindednesses, including graded forms of idiocy, imbecility, moronity (in the English nomenclature feeble-mindedness proper) and subnormals): —

[Syphilitic.]

Encephalopathic: —

Microcephaly, hydrocephalus, focal brain.

Glandular: —

Cretinism, infantilism, dysadenoidism, mongolism (?).

Hereditary: —

Feeble-mindedness, amaurotic family idiocy.

Atypical.

I have placed the syphilitic group, which might possibly be regarded a good genus, under the hypophrenias in brackets. These brackets here and elsewhere are intended to indicate that the genus has been sufficiently covered in the higher group to which the orderly diagnostician will have already had access.

Refer to what has preceded for notes on whether we should prefer neurosyphilis hypophrenica to hypophrenia syphilitica. The decision is a close one. I regard it as in the practical interest of the patient to have him classified under the syphilopsychoses. One example of this sort in which an ordinary form of feeble-mindedness was found due to syphilis has been given in the Southard-Solomon collection previously mentioned; also in

the "Waverley Series on the Pathology of the Feeble-minded" there are data which indicate that we must take into account more than in the past the question of the relation of syphilis to feeble-mindedness.

As for the nomenclature of hypophrenia, I have drawn up the arguments for the use of the term hypophrenia as against several others in the literature in a special paper, entitled "Suggestions in the Nomenclature of the Feeble-mindednesses." ("Mental Hygiene," Vol. II, No. 4, October, 1918.)

Passing to the genera themselves, I am inclined to think that the encephalopathic, the glandular and hereditary groups ought to be regarded as suborders or collections of genera rather than as genera themselves. I do not here propose to suggest a nomenclature for the genera themselves, but have picked out microcephaly, hydrocephalus, other forms of focal brain disorder, cretinism, infantilism, dysadenoidism, mongolism, amaurotic family idiocy and the common form of hereditary feeble-mindedness as suitable genera in the present phase of development of the theory of the feeble-mindednesses.

With some doubt I place mongolism under the glandular diseases because many workers whom I have met feel that this disease will prove to belong there.

As for the common hereditary form of feeble-mindedness, which might be named hypophrenia hereditaria, I feel that it will bulk much smaller than specialists have recently given us reason for supposing. If the encephalopathic cases are pulled to one side (regardless of their possessing tainted heredity, since it is obvious that other factors than mere hereditary germ plasm factors must have been at work), and if many of the glandular cases are set to one side as being directly due to sundry nonhereditary factors, the number of cases which we should be entitled to call hypophrenia hereditaria will be greatly diminished. A number of theoretically preventable cases of feeble-mindedness and a number of cases due to brain-destroying and body-destroying factors of a nongerm-plasm nature have been defined in recent work. Of course the anatomists and pathologists will give statistics that are possibly unfair to the hypothesis of germ-plasm heredity, since the anatomists and pathologists may overvalue sundry of their brain and body findings; but with all due allowance for this anatomic prejudice, certainly the number of cases of hereditary feeble-mindedness in the sense in which we use the term hereditary in the rest of medicine, is year by year diminishing with the progress of medical science.

In my paper of last year, entitled "A Key to the Practical Grouping of Mental Diseases," I endeavored to divide the hypophrenias into genera according to the quantitative results of mental tests. I am inclined to think, however, that this suggestion, however compatible with the spirit of the times with respect to the increasing accuracy of mental tests, is unsuited to the practical work of a clinic. After all, the question whether a patient is a mongolian hypophrenic is more important than whether he is an imbecile or an idiot. The same holds true for hydrocephalus and in fact for a majority of the hypophrenics. The procedure would be to determine your genus and estimate the amount of intelligence shown by the particular example in hand.

As under Group I, I have made provision by the term atypical for genera of an unknown or undescribed nature.

III. EPILEPTOSES (the epileptic group):—

[Syphilitic, Group I.]

[Feeble-mindedness with epilepsy, Group II.]

Alcoholic.

Traumatic.

Encephalopathic.

Jacksonian.

Symptomatic.

Idiopathic.

Equivalent.

Narcoleptic.

Borderland.

Concerning the bracketing of the syphilitic and feeble-minded forms, refer to the remarks under Group II.

I will not here attempt to justify the selection of genera under the epileptoses. This is a veritable mare's nest in classification and the man who wishes to use a classification by putting the elements in order of consideration is greatly at a loss. Practically it has seemed to me that if one could push on one side early the alcohol and traumatic question that one would come down on the questions of brain tumor, etc., with a great deal more confidence than if one started in with the latter. Also, practically there are many questions concerning the proper classification of all sorts of diseases having convulsions. The pragmatic answer to the question whether a given disease should be classified under epileptoses or under some other group depends, it seems to me, on the kind of treatment which you propose on your basis of analysis to give the patient. If the kind of treatment is nothing but the regimen,

custodial or otherwise, which you prefer for epileptics in general, then the case should be classified among the epileptics. If, however, the convulsions are incidental in some bodily disease, or even in some brain disease in which special surgical treatment or other special treatment may be indicated, then it seems to me that we do the patient a pragmatic injury by classifying him among the epileptics and not in some more definite group of diseases. On this line refer to the remarks concerning epilepsy in syphilis under Group I.

The thumb rule would be: never classify a case as epileptic if you can be more definite as to its nature and especially its cause.

IV. PHARMACOPSYCHOSES (the group of mental diseases due to alcohol, drugs and poisons): —

[Epileptic, Group III.]

Alcoholic.

A. Pseudonormal: —

Drunkenness, pathologic intoxication, dipsomania.

B. Peripheral-central: —

Delirium tremens, hallucinosis, Korsakow, pseudo-paresis.

C. Central: —

Jealousy-psychosis, paranoia (?), dementia.

Drug: —

Morphin, cocain, alkaloid.

Poison: —

Lead, gas, mercurichlorid, special.

I will not pause to discuss the details under Group IV. It would seem to me that the designation pharmacopsychoses is a good one, as the Greek word on which the term is founded can be used for both drugs and poisons.

A great deal of theoretical interest attaches to the nature as well as to the diagnosis of the subforms of alcoholic psychoses. I have cast these into three groups, rather inadequately termed pseudonormal, peripheral-central and central. My point is that ordinary drunkenness and so-called pathologic intoxication and dipsomania form three conditions which are, if not normal, then distinctly less abnormal than the other diseases. Drunkenness, it may be stated, is not a form of insanity, and many legislators have so determined, but that drunkenness is not a kind of psychosis I think hardly any one would deny. Here is an instance in which the distinction between a mental disease and insanity comes out very clearly.

But is it possible to distinguish the peripheral-central group from a central one? Practical workers, it seems to me, would agree that delirium tremens, alcoholic hallucinosis, Korsakow's disease and the so-called alcoholic pseudoparesis (if this latter disease exists at all) more closely resemble one another than they do in any of the other forms of alcoholic mental disease. If some one could provide a good designation for this small fraternity of alcoholic disease genera which I have called peripheral-central, he would help our practical work a good deal. I find a good deal of almost useless discussion in early phases of observation of alcoholic cases as to whether they are instances of delirium tremens or alcoholic hallucinosis. I do not wish to deny a generic value to the distinction, but if we could halt our diagnostic process at the point where the observations stop, we should help psychiatric diagnosis not a little.

The third group that I have termed "central" is composed of the jealousy psychoses which most workers acknowledge that they find in certain instances, paranoia (a much more doubtful matter) and dementia. Here are diseases in which the peripheral element, histologically and symptomatically, is far less in evidence. To be sure there may have been some element of a peripheral nature in the disease at some time, but the chances are that such cases with strong peripheral element belong in the peripheral-central group rather than in the central group. An exact and elegant nomenclature would be a bonanza for practical workers among the pharmacopsychoses.

V. ENCEPHALOPSYCHOSES (focal brain lesion group of mental diseases): —

[Syphilis.]*

[Feeble-mindedness.]*

[Epilepsy.]*

[Alcohol, gas.]*

Traumatic. Note that the traumatic neuroses, although they form a group of mental diseases, belong not here in Group V, but below in Group X, the psychoneuroses.

Neoplastic.

Infectious. The infectious group of encephalopsychoses here listed refers to cases like brain abscess and meningitis in which the organism has produced local destructive effects in the brain.

Vascular. Under this group would fall the great group of arteriosclerotic dementias which, be it noted, are parted out from the old age psychoses; Group VIII, below.

Degenerative.

* These have been classified, respectively, under syphilopsychoses, Group I; hypophrenoses, Group II; epileptoses, Group III; and pharmacopsychoses, Group IV.

VI. SOMATOPSYCHOSES* (the so-called symptomatic group of mental diseases): —

[Glandular feeble-mindedness.]

[Symptomatic epilepsy.]

Infectious, *e.g.*, typhoid.

Exhaustive, *e.g.*, puerperal.

Metabolic, *e.g.*, cardiorenal.

Glandular, *e.g.*, thyrotoxic.

Pellagrous.

I have tried to define the genera under the five subgroups here mentioned, though I assume that the progress of science will show that a symptomatic psychosis due to the typhoid bacillus is to be distinguished from a symptomatic psychosis due to the pneumococcus; but these are matters for the future to decide.

In practice one should not term a case infectious psychosis, in my opinion, unless an organism has been cultivated from the case or unless there is exceedingly strong evidence that an infection is in play. A good many puerperal cases, when organisms are cultivated therefrom, become on this basis infectious cases rather than exhaustive cases; but who would say that such a translation from one group to another would not be of benefit to the case?

Many authors speak of a toxic-infectious group, of an infectious-exhaustive group or even of a toxic-infectious-exhaustive group, but it seems to me with these double and triple designations we get on not much better than if we confine our statements to saying that the case belongs among the symptomatic psychoses. In short, we are making a very rough diagnosis and placing a case in a large group, but we are rather deluding ourselves that we are making entitative diagnosis.

When infection is not in play and when exhaustion is not in play, I can hardly see the advantage of using the term toxic. The term toxic suggests to the medical hearer that there may well be a toxin in play, that is, such a substance as may be demonstrated in the test tube or under other strictly scientific rules. If pinned down to the meaning of the term, the physician is apt to be reduced to saying that the term toxic refers to certain clinical symptoms that resemble those that are the known effects of toxins or poisons, infectious or otherwise. But is not this a retreat to ground altogether too general to be of value in diagnosis? Perhaps others will not agree with me; but when I see the term

* The term "somatic" is here used following a frequent neurologic plan which employs the term "soma" for the body at large, as against the "encephalon" or brain.

toxic and feel that there is no possible laboratory approach to the toxin-poison question, I fall into a marsh of doubt.

The third group of genera here termed metabolic is also sometimes laden with the term toxic, in fact, possibly the term autotoxic might be preferred by many to the term metabolic here used. I can see that the term metabolic is too general a term, but, on the other hand, the term autotoxic seems to specify too much.

The point in the ordering of these subgroups is that, in practical diagnosis, one ought to exclude in succession conditions in which there is a known infectious agent, conditions in which an exhaustive state without known infection, conditions of a general metabolic or autotoxic nature. Those ought to be eliminated from the scene before the glandular cases are brought under consideration.

Possibly the pellagrous group might be placed first under the symptomatic group. Indeed, in regions where pellagra is infrequent, now and then grave errors of diagnosis have been made. I well remember that one of the first cases of pellagra which came to the Psychopathic Hospital was one of an obscure kind of depression with apparently a cyanosis of the hands regarded as a very proper vasomotor by-effect in his psychosis. By the systematic sequential consideration of these conditions, including pellagra, the question was definitely raised concerning this man whether he might not be pellagrous. The psychosis was then more carefully examined and sundry other features were brought into alignment with the manual lesions. A tentative diagnosis of pellagra was made and the patient thereafter developed a classic form of the disease.

VII. GERIOPSYCHOSES* (the presenile-senile group of mental diseases): —

[Epilepsy.]

[Vascular.]

[Alzheimer's.]

[Progeria.]

[Late katatonia.]

[Involution-melancholia.]

Presenile psychoses.

Senile dementia.

Presbyophrenia.

Senile psychoses.

* This term is adopted provisionally as against the possible term presbyopsychoses, because of Nascher's choice of the term "geriatrics" for his proposed branch of medicine, dealing with the diseases of old age.

One of the peculiar advantages of this pragmatic sequence of consideration is that the senile dementers are removed so far from the arteriosclerotic cases. (Refer to note under Group V.) Kraepelin rightly terms the presenile division of psychiatric cases the darkest field in psychiatry. I am aware how many subgroups Kraepelin has proposed among the preseniles, but for the moment am unable to define what types should be given under the heading presenile psychoses.

VIII. SCHIZOPHRENOSSES (the dementia præcox group): —

Hebephrenia.

Katatonía.

Paranoid.

Cyclothymoid.*

Schizophasia.

D. præcocissima.

D. simplex.

Paraphrenia.

As for Group VIII, no discussion need be given concerning hebephrenia, katatonía and paranoid. To be sure, concerning the latter Kraepelin has endeavored to distinguish two forms, *mitis* and *gravis*, but whether this is a pragmatic distinction of great importance to the future of the patient is doubtful.

As for the term cyclothymoid, I feel that this concept is of some value. First, concerning the term cyclothymoid. The name of this genus, if it be such, would be “schizophrenia cyclothymoides.” The ending *oides* used in the specific adjective would be in general borrowed, as in this instance, from some other genus or group. By “schizophrenia cyclothymoides” we would then mean a dementia præcox that somehow very closely resembled a manic-depressive psychosis, that is, a schizophrenia that somehow closely resembled a cyclothymia. If now there were a true cyclothymia (that is, manic-depressive) that closely resembled a schizophrenia, we should be forced to dub it “cyclothymia schizophrenoides,” borrowing for our specific adjective from another genus and adding the ending *oides*. This procedure would be roughly in accordance with botanical procedure. It would be purely a question of fact whether there is such a condition as “cyclothymia schizophrenoides.”

* This genus, if it be such, is devised to include the practically very important group of cases in which the schizophrenic process is precipitated by phenomena that resemble manic-depressive psychosis, or in which there is a definitely cyclothymic course in itself suggesting the true cyclothymoses.

As for the existence of cyclothymoid types of schizophrenia, there can hardly be any doubt that these forms exist. When Kraepelin expanded his original three forms of dementia præcox to nine, he found himself with three new subforms that I have here lumped together under the heading "schizophrenia cyclothymoides." There can be no practical doubt of their existence.

As for the other subheads under the schizophrenias, schizophasia is a small group of Kraepelin's own, of which we now and then see examples. I have added dementia præcocissima group of de Sanctis not because its existence is necessarily well established, but because there seemed to be cases which might well belong in the group if they could be held under observation for some decades longer and their course made out.

It is a question whether dementia simplex should form a genus alongside hebephrenia and whether dementia simplex is more than a mild form of hebephrenia. The term is useful for those cases of slight deterioration which we see in subjects that remain sufficiently well to be self-supporting and only slightly eccentric or dull.

The genus paraphrenia is, as Kraepelin has proposed, practically Magnan's disease, that is the *délire chronique à évolution systématisée*. Kraepelin gives four subclasses of this disease which may possibly be species of varieties, namely, paraphrenia systematica, confabulans, phantastica, expansiva.

IX. CYCLOTHYMOSES (the manic-depressive and cyclothymic group of mental diseases): —

Cyclothymic constitution.

Manic-depressive.

Melancholia.

Mania.

Mixed.

Involution-melancholia.

As to the distinction between manic-depressive and the mixed forms of cyclothymia, I would suppose it wise to call manic-depressive cases (in this generic sense) those in which both mania and depression in different phases of the patient's course are developed.

It would be wise in my opinion to replace the term manic-depressive as a group designation with the term cyclothymia, which brings out the affective features and the phasic features of the disease. If a case is cyclothymic, we shall be able to arrive

at the diagnosis having excluded all its competitors for preference down through the schizophrenias.

Now let us say that we are confronted by a case of pure mania or pure depression which we know is not syphilitic, or alcoholic, or symptomatic of some somatic condition, or schizophrenic. We shall be entitled to term it cyclothymic with a high degree of probability, unless perchance on further investigation we determine it to be a psychoneurotic phenomenon. But, again, can we say that this phase of mania or depression is going to be followed by its opposite, depression or mania? It seems to me that we decidedly cannot. The prognosis would better be confined to saying that emotional disorder is likely again to occur. Is not this approximately the extent to which one can now go in making a prognosis in cyclothymic cases? The future may do more for us than the past. Wernicke remarks that no case of chronic mania was ever initiated by an acute mania. A number of important and easily manageable statistical researches could be made on this line; but psychiatrists are not particularly interested in such statistical researches, however valuable in prognosis their results might be, because they seem to be under the spell of the idea "manic-depressive." According to my conception, the idea of manic-depressive is the idea of a large group of diseases. It is questionable whether Kraepelin discovered a new disease. He defined a great group of diseases, each of which had already been defined, as having certain affinities with one another.

As for the term mixed, I wish by this term to signify cases in which depressive and maniacal phenomena are commingled within a single phase of the disease.

As for involution-melancholia and its placing among the cyclothymias, I do not wish to take a definite stand. Very possibly this disease would better be placed among the old age phenomena, as the term involution would suggest.

X. PSYCHONEUROSES:—

Hysteria.

Neurasthenia.

Psychasthenia.

This is not the place to discuss the genera and species and varieties of the psychoneuroses. Walton some years since insisted on the value of not making generic diagnoses of neurasthenia, psychasthenia or hysteria. He would have the diagnostician confine himself to terming the case psychoneurosis.

Regarding hysteria, I am inclined to think that in many early phases of these psychoneuroses, Walton's plan is beneficial. It is a question how far a diagnostician wishes to go. Some physicians are perfectly content to call a case mental, that is to say, under the *morbi mentales*, and let it go at that. Others will be content to place a case, for example, under the psychoneuroses and then call in some person especially qualified to cure the case; for the psychoneuroses form essentially the psychotherapeutic group. The specialist may wish to go farther and identify the genus or species, or even the varieties of the large group. No doubt the progress of science depends on further developments in these directions, provided that these developments be pragmatic ones in the interest of helping the patient.

XI. PSYCHOPATHOSES (the psychopathic group of mental diseases): —

- Prison psychosis.
- Folie à deux.
- Litigation psychosis.
- Paranoia.
- Sense deprivation psychosis.
- Monomania.
- Psychopathia sexualis.
- Psychopathic personality.

Concerning the last or eleventh group, there might be much to say. Let me say here that I would speak of this group in common parlance as the psychopathias, not using the ordinal term psychopathoses except in contradistinction to other ordinal groups. The existence of these scientific terms having relatively exact distinction should not preclude our every-day use in the clinic of commoner terms. Just as one would not order *Rosaceæ* at the florist's or *Leguminosæ* at the grocer's, so one would not use these scientific terms except when one was in doubt exactly where a case ought to belong. In the progress of psychiatric science, the genera under this eleventh group ought to become more and more definite. Some of the genera will doubtless be relegated to pre-existent groups; others may form new orders suitable to elevation to the rank of groups like the psychoneuroses, the syphilopsychoses, etc. I have given in the preceding a small collection of these doubtful psychopathias. None of these require special mention here, perhaps.

Paranoia, I place among the doubtful psychopathias because I do not see that it has been proved to have a schizophrenic na-

ture, and feel that it cannot otherwise be placed in the previous groups. The suggestion that it is a sort of intellectual infantilism is an attractive one, but it seems a little far-fetched to place our apparently complex paranoias among the feeble-minded.

Some persons might object to the use of the term monomania, but if we do not use this term we should need to enumerate such genera as kleptomania, pyromania and poriomania (*Wanderlust*). The polemic in which the term monomania was overthrown is long since reduced to ashes. The term it seems to me remains a good one for precisely those nonsexual cases with unusual development of particular instincts.

As for the term psychopathic personality, it is surely a bone of contention; but if we exclude the sexual cases under the term psychopathia sexualis and exclude the cases with special instincts in strong relief (the monomanias), we shall then have on our hands certain cases of psychopathic personality that are apparently worthy of a place. Many of the so-called defective delinquents very probably fall in this group, though an endeavor should constantly be made to place them among the hypophrenics, the epileptics, the schizophrenics, the psychopathic monomanias, etc. All psychiatrists agree that we should not prejudge the situation in criminology by terming all defective delinquents forthwith psychopathic personalities. Let us leave room for the existence of criminals that are not psychopathic.

One might inquire whether there are not certain psychogenic cases that might belong in this eleventh group, that is, cases which cannot be regarded as hysteric, neurasthenic or psychasthenic. Doubtless the neuropsychiatry of the war will help to resolve that question.

SUMMARY.

In this paper I have tried to amplify the key to the practical grouping of mental diseases presented to the American Neurological Association in 1917. I have amplified it by proposing certain genera comprised under each of the eleven major groups of mental diseases. These genera have been placed in the sequence supposed to be the pragmatic sequence in which the inexperienced diagnostician should seek to exclude successively the various genera; in short, just as the key to the practical grouping of mental diseases dealt in a certain sequence with eleven major groups, so here the diagnostician is given an idea as to the proper method of considering one after another the genera comprised in each great

group. No endeavor has been made to revamp or especially modify the ideas of psychiatrists as to what psychotic entities exist. Finality cannot be hoped for either theoretically or practically. The principle of diagnosis *per exclusionem in ordine* is the special principle insisted on. *It is applicable to any diagnostic problem after the data of observation are collected.* True diagnosis can only take place after sufficient data are collected, and efforts to make diagnoses early in the stage of collecting data are apt to result in prejudice.

The writer earnestly hopes for critique of his propositions. Such critique he hopes will be separated into —

(a) Critique of the general principle of *diagnosis per exclusionem in ordine*.

(b) Critique of the genera chosen for the different groups.

(c) Critique of nomenclature.

But judging from the world's experience in the past, it is unlikely that many persons will be able to distinguish nomenclature from the objects named and the method of using a classification from the classification itself. Herein some nomenclatural suggestions are made; but they have nothing to do with the main line of argument. Herein a certain classification is adopted, but there is absolutely no pretence to originality therein. The writer's main emphasis is on the pragmatic principle of diagnosis, namely, the principle of diagnosis by exclusion in order, which principle will prove useful or useless without regard to the classification which it endeavors to exploit or the nomenclature which it uses by the way.

RECENT AMERICAN CLASSIFICATIONS OF MENTAL DISEASES.*

BY E. E. SOUTHARD, M.D.

The American Medico-Psychological Association has now adopted a classification of mental diseases which appears in general to be a highly satisfactory classification. This new standard American classification has been drawn up with the interests of district State hospitals largely in mind and is in some respects not suitable to the somewhat broader material confronted by the general practitioners and by the staffs of psychopathic hospitals. It is with the interests of general practice and of psychopathic hospital practice that I have been in recent years busy in the matter of early diagnosis. Accordingly, it was with great interest that the classification presented by the highly competent committee of the association was greeted by those of us who had to do with the task of diagnosing the "incipient, acute and curable" group of mental diseases flowing through the psychopathic hospital wards and out-patient departments. It was with the last two groups (21 and 22 of the American Medico-Psychological Association's classification) that psychopathic hospitals obviously had most to do, namely, with the so-called "undiagnosed psychoses" and the so-called "not insane." Whereas the association's committee evidently regards the group of "undiagnosed psychoses" as a comparatively small one and specifically states that the "not insane" group should receive the occasional cases which, after investigation and observation, give no evidence of having had a psychosis, it is clear that psychopathic hospitals and out-patient departments will always find at least a minority of their cases in one or other of these groups of "undiagnosed psychoses" or "not insane." It appears likely, therefore, that future developments in mental hygiene, with the establishment of psychopathic hospital facilities attracting great numbers of "incipient, acute and curable cases" into the psychiatric circle, will require some corresponding developments in the American Medico-Psychological

* Presented in outline at the seventy-fourth annual meeting of the American Medico-Psychological Association, Chicago, June 4 to 7, 1918.

Association's classification. The American Medico-Psychological Association's classification appears in short to be one dealing with the insane in the committable sense and not with psychopaths in the broader sense of modern mental hygiene. The committee terms this last group, namely, the "not insane," a group in which it is determined that no psychosis existed. It is doubtful whether the association committee should use the term psychosis in this narrow sense of a disease suitable for care in hospitals for the insane. It ought to be a task of this continuing committee, at least in the writer's opinion, to arrive at a decision whether the term psychosis should be used as equivalent to medicolegal insanity (in the sense of at least potentially committable "certifiable") or whether the term psychosis should be used in a broader sense to cover cases of mental disease which are not even potentially committable. In our local Boston Psychopathic Hospital practice, we have fallen into the habit of specifying, in all instances where there can be the slightest doubt, whether we are dealing with (a) a psychosis committable, (b) a psychosis not committable, or (c) a psychopathic condition too ill defined to warrant the term psychosis. And beyond these psychopaths might be (d) a group of eccentrics or anomalous persons who only concern the psychiatrist remotely, among whom might be found, *e.g.*, many of the so-called defective delinquents. Whatever the decision in this matter, it is clear that the vistas of diagnosis opened out by psychopathic hospital practice are far deeper than those of district State hospital practice in its usual sense.

Of course, the practicing neurologist, who was in effect all the time a kind of psychiatrist, had always to deal with this penumbra of psychiatric diagnosis, and practical alienists in the medicolegal sense of that term had in point of fact to be the most delicate observers in the world of just these nuances of psychiatry.

But one should not find so small a fly in the ointment of the new American Medico-Psychological Association's classification, and it would appear to me that in the course of a very few years, especially with the stimulation afforded by the neuropsychiatric problems of the war material, the American Medico-Psychological Association's classification will be whipped into a still more generally applicable shape.

Our own problem in the field of diagnosis of the "incipient, acute and curable" group was not so much the nature and conditions of a classification as the method by which one should most speedily and accurately arrive at a diagnosis. It was not so

much the nature and number of the entities in question as the process-types of their diagnosis that formed the new task of the Psychopathic Hospital. Again, let me insist that by calling the task new I do not mean to say that it is not in one sense a problem as old as the hills, confronting every general practitioner, every consulting neurologist and every specializing medicolegal alienist; but the problem is new in the sense that hardly any institutions in America, except the Psychopathic Ward of the University of Michigan at Ann Arbor, and the Psychopathic Hospital in Boston, had been so equipped as to confront a large mass of material with all modern diagnostic weapons. For, despite the relative accuracy and practical moment of the results attained in institutions like the Bellevue Hospital Psychopathic Ward and the Psychopathic Ward in Cook County, Illinois, it cannot be said that these institutions had been supplied by the local governmental authorities with enough means and large enough staffs to do justice to modern methods.

Again, let me insist that I do not decry the efforts of local governments in establishing such institutions as the Bellevue and Cook County institutions, which in their practical way may accomplish as much as or even more than institutions which are theoretically and scientifically better off. Nor can I think of any means of sharpening psychiatric diagnosis better than a four or six months' course in contact with the mobile and polychromatic material passing through the New York and Chicago institutions mentioned. However, in the interests of mental hygiene it seems that the local governmental authorities should strengthen such institutions as these by enlarging their staffs, greatly developing their laboratories, and immensely extending their social services. The tasks confronted by the four institutions mentioned, two of which have been properly equipped from the scientific point of view and two of which have served their practical turns even better than could have been expected, are tasks of diagnosis that any attempt at classification must take into account.

Stimulated by this problem in mental hygiene, a problem really of the greatest magnitude for almost everybody's future, and stimulated by the progress made by the American Medico-Psychological Association's committee on statistics, I examined recent American textbooks of psychiatry with the aim of learning how many entities were considered by competent psychiatrists really to exist. I had blocked out a paper dealing with these classifications, anticipating most interesting divergences of opinion and

hoping to learn something from the mutual critique which the various classifications would afford. There had indeed been a certain healthy disputatiousness in recent American psychiatry, or at least an interesting appearance of acrimony, which led one to hope much from a study of these supposed divergences of opinion. In point of fact, I found extraordinarily few genuine divergences. There were, to be sure, divergences of nomenclature and there are many among us who hardly distinguish between nomenclature and classification; but setting on one side nomenclatural questions, the actual and fundamental differences which can be found, *e.g.*, in a comparison of a textbook by Dercum with a textbook by White, are singularly few. I was somewhat disappointed to find so little actual theoretical controversy in American psychiatry. The only sign of healthy competition in hypotheses is to be found in the Freudian discussions which are certainly acrimonious enough, little as they frequently attack the central and underlying problems at stake. But, aside from the small Freudian unpleasantnesses, there is singularly little viable controversy over psychiatric theory in recent American work. Accordingly, I gave over my projected analysis of the supposed divergences in American theoretical psychiatry as shown in the favorite textbooks (among which may be mentioned DeFursac in Rosanoff's latest modified edition; Dercum; Diefendorf; Knapp in Strümpell's "Practice of Medicine;" Peterson in Church and Peterson's Textbook; and White), and can only report the extraordinary unanimity above mentioned, a unanimity which was doubtless at bottom the reason why the Medico-Psychological Association could so readily bring about an adoption of its classification. Whatever anybody's doubts as to the details thereof, the classification could certainly be practically used. I hope only, from the point of view of general developments in mental hygiene, that the committee will be a truly standing and dynamic committee, ready to consider year by year modifications which may be proposed, to the end that possibly at the expiration of either a hemi-decade or a decade, the classification may be revamped.

But how shall any classification of mental diseases be employed? How shall we approach the classifying of mental diseases, as we, for example, approach the classification of an unknown plant or animal? What are the processes employed in actual diagnosis aside from the methods of collecting data and observation? This is no merely academic task. It has been the daily task of

the Psychopathic Hospital in Boston during the last six years, in the practical handling of over 10,000 cases, a large minority of which are decidedly doubtful as to their place in any psychiatric nosology. This task must also be very prominent, as indeed the reports of these institutions show, in such hospitals as the Psychopathic Ward at Ann Arbor, the Bellevue Psychopathic Ward, and perhaps to a less extent in the Psychopathic Hospital in Cook County, Illinois. After the youthful aspirant to honors gets over his initial confusion at variations in nomenclature and becomes cognizant of the chief constituents of psychiatric nosology by their actualities if not by their names, how shall he consolidate his progress and generalize his diagnostic method? It is somewhat in psychiatric diagnosis as in the learning of an intellectual game, such, for example, as chess: the early difficulties as to nomenclatural variations correspond to the initial difficulties in learning the names and movements of chess men, but this superficial and early difficulty in chess is speedily replaced with difficulties of an entirely different logical nature.

The chess enthusiast now reads chess books, goes over game variations, studies openings and endings, and tries to become an accomplished chess player through transfer of book knowledge to his practice. In this effort he naturally, as in all other departments of science and art, always fails. He then acquires through practice, with continual reference to books or authorities, that measure of true chess knowledge which he is able to attain. He now becomes equipped with certain chess fundamentals, not too easy to reduce to propositions, although some endeavor has recently been made to accomplish this even in that most complex of all games — chess.

The medical problem of diagnosis in mental disease resembles more closely the process of classification of plants and animals than it does the choice of lines of play in chess. Probably in a later stage of psychiatric science, we shall find, in the choice of therapeutic terms and in their pragmatic modifications, much more of an analogue to the difficulties of chess.

But, it may be asked, how is it possible to reduce the classification of mental diseases to such simplicities as now run in botany or zoölogy? One could not hope for quite the definiteness which prevails in the taxonomies of biology when one has to deal with any form of disease, let alone the mental diseases. Still, after all, the distinction between genera and species is a distinction which is not at all confined to botany and zoölogy, but is a

most ancient logical distinction, found at least as early as the Greek logicians. Heads and subheads have been known to all thinking persons since thinking persons arrived on the scene.

Out of purely practical considerations, there was developed from the Psychopathic Hospital experiences what I termed "A Key to the Practical Grouping of Mental Diseases," published in the "Journal of Nervous and Mental Disease" for January, 1918, in which mental diseases were divided roughly into eleven great groups, corresponding somewhat accurately to the so-called botanical or zoölogical "orders." Above I mentioned the fact that some persons do not readily distinguish between nomenclature and classification and consider that, where there are many nomenclatural divergences, there are also many divergences in classification. I said that facts proved, on analysis of leading American psychiatric textbooks, that despite sundry differences in nomenclature, their classifications betrayed an extraordinarily single mind on the part of American psychiatrists. Now I find that other persons, who shall also be nameless, find it difficult to distinguish not only between nomenclature and classification, but between classification and a key to a classification or the method by which a classification is used.

Conceding that the American Medico-Psychological Association's classification, adopted as it has been by a great number of American institutions and by the United States government for war purposes, is a reasonably good classification and aware that its constituent elements fairly well correspond with what all American psychiatrists fundamentally agree upon, the problem still remains, how shall this classification be used; how shall we arrive at the result that a given case falls into one of the twenty-two groups listed by the association's committee?

Again, I find that just as some persons fail to distinguish nomenclature and classification and others fail to distinguish classification and key, so still others fail to distinguish between the process of diagnosis and the process of collecting facts upon which a diagnosis is grounded. I find no special divergences of opinion on the part of American psychiatrists as to the methods of observation, that is, the art of collecting data of observation. To be sure, there is one eminent neurologist who triumphantly proclaims that he knows really no one or hardly any one who can take a knee-jerk; but this kind of claim of superiority in the art of observation is hardly to be endured save by some process of cleverly adapted ridicule. There is really no important split in

the psychiatric world upon the methods of collecting data. Even the perennially diurnal methods of collecting a clinical history, recommended by the Freudians, do not logically differ from the scandalously inadequate cheese-boring methods adopted by the unregenerate psychiatrist of every-day life.

Suppose, then, that (a) nomenclatural divergences be for the moment forgotten; suppose that (b) some classification, *e.g.*, the American Medico-Psychological Association's classification, be accepted as containing all the constituents wanted for statistical tables; and suppose that (c) the collectors of data are duly making proper observations according to modern standards, there will still remain the question of the process of logically arriving at a diagnosis, that is, a diagnosis of the entity to which the case may be supposed to belong.

I find, however, that there are some persons who choose to deny that there are any psychotic entities and presumably that there are any pathological entities whatever. The term entity for these persons appears to have some bristling dread arcanum about it, having a smack of metaphysics; inasmuch as every individual is, through the fact of his being an individual, so very different from every other individual, how can we compress him into an entity? Shall we not do him therapeutically an enormous injustice by subsuming him under any head whatever? Here, in my opinion, is an extraordinary overdevelopment in application of the principle of identity of indiscernibles. Was it not Leibnitz who proved or proclaimed that no two leaves of grass were identical with one another? By the same token, should we not all agree that no two persons and, *à fortiori*, no two psychopaths are at all alike? And does not this assertion mean that we cannot put any two psychopaths into one entity? This is not the place in which to discuss the inner spirit of the principle of the identity of indiscernibles; but I confess that those persons who over-emphasize the principle of individualization are to my mind just as little at ease in the logical world as those who are forever generalizing. Without further argument, therefore, I want to say that I have no objection to any entity whatever, provided there is a good argument in the general psychiatric mind for its existence.

The argument in my brief paper, entitled "A Key to the Practical Grouping of Mental Diseases," was an argument for an application of the original principle of order, a principle which has been greatly developed in modern logic. I have put a few his-

torical remarks upon this matter in a paper published in the "Journal of Clinical and Laboratory Medicine," 1918, entitled "*Diagnosis per Exclusionem in Ordine: General and Psychiatric Remarks.*" In this paper I have called attention to the late Professor Royce's remarks upon the principle of order in modern logic and have given some reasons why it seems to me an important thing for medical diagnosis to follow this modern line of logical developments. It will be wise, however, to emphasize in this inductive age that the considerations in the paper called "A Key to the Practical Grouping of Mental Diseases" were born in practice and not in books of logic. The fact is, that in mental diseases there are few or no reliable indicator symptoms. I have tried to develop this point somewhat more in detail in a paper on "The Genera in Certain Great Groups or Orders of Mental Disease," presented before the Neurological Association and published in "Archives of Neurology and Psychiatry," 1919. The fact that there are practically no indicator symptoms of particular mental diseases led me to be able to say to the neurologists the following: "Let a young diagnostician of the dogmatic or slightly paranoid type get the initial idea that a case belongs in the dementia præcox group, he will be able to defend his thesis against all comers by the use of symptom lists founded upon the very best textbooks; in fact, the better the textbook, the easier for the young tyro to carry his point — for the time being."

In short, if we attempted to use in the field of psychiatric diagnosis any such scheme as that of the "presenting symptoms" of Richard Cabot's formulation, we should land in quagmires of classification. For any presenting symptom, *e.g.*, mania, depression, grandiosity, delusion, even hallucination, would suggest any one of a great quantity of mental diseases. Some small tip or "hunch" would then suggest that the said symptom belonged in Group X. Upon reference to books of authorities, said symptom would be unfailingly found in Group X. A great number of collateral symptoms would also be found therein. To be sure, the systematist might have given some little idea of the statistical frequency of the given symptom; but he would be careful to say, for example, that a depression is occasionally found in dementia præcox and that auditory hallucinations are occasionally found in manic-depressive psychoses. The tyro bent upon making a diagnosis of one or other of these diseases would hardly get the statistical nuances of the entire situation.

Without going into this matter of the lack of indicator symptoms in the field of mental diseases, I think it will be conceded by all that a young diagnostician (or even an academic old one) is very often able to press the phenomena of practically any case into any one of half a dozen groups. Hence the obscurity and the delights of psychiatric diagnosis!

Where there are no indicator symptoms, it seems desirable to examine the entire logical material in an orderly way, confronting in sequence the various possibilities. This might be done by lot or in some other arbitrary fashion, as, for example, by an alphabetical method, or do it by a mere casting up of lots. For example, this method could be applied to the American Medico-Psychological Association's classification as follows: —

1. Is this a case of traumatic psychosis?
2. Is it a case of senile psychosis?
3. Is it a case of psychosis with cerebral arteriosclerosis?
4. Is it a case of general paresis?
5. Is it a case of psychosis with cerebral syphilis?
6. Is it a case of the psychosis of Huntington's chorea?
7. Is it a case of psychosis with brain tumor?
8. Is it a psychosis with other brain or nervous disease?
9. Is it a case of alcoholic psychosis?
10. Is it a case of psychosis due to drugs and other exogenous toxines?
11. Is it a case of psychosis with pellagra?
12. Is it a case of psychosis with other somatic disease?
13. Is it a case of manic-depressive psychosis?
14. Is it a case of involution-melancholia?
15. Is it a case of dementia præcox?
16. Is it a case of paranoia or paranoic conditions?
17. Is it a case of epileptic psychosis?
18. Is it a case of psychoneurosis or neurosis?
19. Is it a case of psychosis with constitutional psychopathic inferiority?
20. Is it a case of psychosis with mental deficiency?
21. Is it a case of psychosis which we are unable to diagnosticate in any one of the previous twenty forms?
22. Is it a case which, on investigation and observation, gives no evidence of having had a psychosis and is, in the nomenclature of the American Medico-Psychological Association's classification, "not insane"?

It is probable that the fatigue point would be reached early in this method of couching the questions of a diagnosis in sequence. It would in fact appear to the writer that the American Medico-Psychological Association's grouping is a grouping based upon a

deductive order derived from other considerations than those of diagnosis. The grouping is probably based upon certain notions of etiology. Psychoses with destruction of brain tissue appear to be placed early in the list, and psychoses in which the brains are normal or relatively normal are, with a few exceptions, placed late in the list. The order is one affected by numerous German textbooks and is the opposite of what most French textbooks affect. For the latter are apt to place their equivalents of manic-depressive psychoses, dementia præcox and the like at the outset of their discussions. Deductively, it would hardly matter which order one adopted in a reference book. For, having by some means obtained a diagnostic clue to the fact that a disease was probably alcoholic or pellagrous or paranoic, one might then refer by index or table of contents to the reference book, in which would be given the differential signs for the disease in question. This would be the method adopted for general medicine in, for instance, Herbert French's "Index of Differential Diagnosis." It is in some sense the method adopted by Cabot in his "Differential Diagnosis."

It does not appear to the writer that this attempt at an etiological ordering has proved especially successful. It does not appear to him that either the German or French method can be said to be particularly superior to the other. It would, on the other hand, appear that a pragmatic ordering in the interests of diagnosis would be preferable to a theoretical ordering in the interests of etiology. To be sure, where etiology has been established and particularly where the morbid agent is single and definable, it is true that the theoretical and the pragmatic groupings would prove identical. But in how many mental diseases can we say that the etiology is established? In how many is it probable that a single morbid agent will be proved to be ample to bring the psychosis about?

In short, I feel that etiological classifications may have their place and that we are gradually approaching a unanimity in this most difficult matter. But from the standpoint of pragmatic diagnosis, that is to say, from the standpoint of choosing some therapeutic plan to follow in a given case, I think that the American Medico-Psychological Association's order, to say nothing of the Kraepelinian order which it roughly follows, or any other ordering, *e.g.*, of French textbooks, has little to recommend it from the standpoint of practical diagnosis. Shall any one say that we ought to begin to consider whether a psychosis is trau-

matic, senile, arteriosclerotic, before we consider that it is syphilitic, choreic, neoplastic, etc.?

However, the main objection to the American Medico-Psychological Association's grouping, from the practical standpoint, is that the number of groups is too large to bear practically in mind, at least for the diagnostic tyro. It would seem desirable to throw these groups still further together, if we are not to transgress the fatigue point for the inexperienced diagnostician. So far as the expert diagnostician goes, he truly may not require any special ordering at all, for the expert may on inspection catch up enough tips and "hunches" by which to arrive forthwith at something like the actual diagnosis. But we are not here considering what the process type of diagnosis on the part of the expert is. We are, on the other hand, trying to choose an order in which to consider the entities of psychiatric nosology for the practical purpose of arriving at the entity whose choice will aid the patient as to treatment.

Da Costa used to remark that the process of diagnosis by exclusion was a tedious one. The remark appears to have been founded upon the idea that one might have to exclude all the nosological entities in the textbooks one by one in order to arrive at a proper diagnosis by exclusion. Da Costa's textbook was one of the earliest of the modern single volume textbooks in medicine that have so dominated medical schools and consulting room practice. The processes of diagnosis which the Philadelphia school and their followers have advocated and used, no doubt with great practical success, have been processes of clinical type-matching rather than processes of diagnosis by exclusion. I went into this matter somewhat *in extenso* in the paper called "*Diagnosis per Exclusionem in Ordine*," to which I will refer an interested reader. In point of fact, diagnosis by exclusion does not need to be tedious, if only the diagnostician is able to unite the different entities in his diagnostic field into a small number of groups characterized by particular signs and symptoms, or groups of such signs and symptoms.

How, then, might the diagnostician who should want to apply the logical principle of order in his diagnosis use such a classification as the American Medico-Psychological Association's classification? Omitting to consider nomenclatural differences and thinking of the observational data in hand which he may desire to use, how shall the diagnostician proceed to choose one of the 22 groups of the American Medico-Psychological Association's

classification, or one of the 65 (more or less) clinical types mentioned under 11 of the 22 groups? (Eleven of the 22 groups of the American Medico-Psychological Association's classification were subordinate clinical types; for example, Group 4, General Paresis, is not supplied with special clinical types to be used in general statistics, nor is Group 5, entitled Psychoses with Cerebral Syphilis, supplied with special clinical types, although the plural form "psychoses" indicates that there are probably several such types. Accordingly it would be safe to say that we deal with far more rather than far less than 65 clinical types in the American Medico-Psychological Association's classification of mental diseases.)

How, then, might we order these groups and entities? I have proposed in the paper "A Key to the Practical Grouping of Mental Diseases" the following list, in what seems to me to be the most practical diagnostic order of consideration. (Let me here insist that this is *not an order suggested for the collection of data*, but an order for the consideration of all the data after they have been collected in due amount for diagnosis: any attempt to proceed to diagnosis before a due amount of data is in hand is bound to be dangerous or at all events of transitory value.)

MENTAL DISEASE GROUPS (ORDERS).

- | | | | |
|-------|--|-----------|---------------------|
| I. | Syphilitic, | | Syphilopsychoses. |
| II. | Feeble-minded, | | Hypophrenoses. |
| III. | Epileptic, | | Epileptoses. |
| IV. | Alcoholic, drug, poison, | | Pharmacopsychoses. |
| V. | Focal brain ("organic," arteriosclerotic), | | Encephalopsychoses. |
| VI. | Bodily disease ("symptomatic"), | | Somatopsychoses. |
| VII. | Senescent, senile, | | Geripsychoses. |
| VIII. | Dementia præcox, paraphrenic, | | Schizophrenoses. |
| IX. | Manic-depressive, cyclothymic, | | Cyclothymoses. |
| X. | Hysteric, psycho-, neurasthenic, | | Psychoneuroses. |
| XI. | Psychopathic, paranoiac, <i>et al.</i> , | | Psychopathoses. |

As for Group I, the Syphilopsychoses, it will be noted that, for practical purposes, I would wish to group the American Medico-Psychological Association's Group 4, General Paresis, Group 5, Psychoses with Cerebral Syphilis, and Group 8, Psychoses with Tabes, together, simply because in early phases of the development of syphilitic psychoses a grave damage may be done to the patient if the diagnosis "general paresis" is affixed simply because

the patient appears to have some features that correspond with the book authorities on early paresis. It seems to me that all experiences indicate that no combination of clinical and laboratory signs will permit us to make a diagnosis between diseases of groups 4 and 5, without long study and the passage of years. Of course I would not mean to exclude numerous striking exceptions in which an immediate diagnosis of general paresis would be warrantable; but these striking exceptions of diagnosis virtually by inspection have nothing to do with the stock difficulties of practical diagnosis. Here, then, is a good instance in which for practical purposes two or more of the groups and types of disease mentioned in the American Medico-Psychological Association's classification might be fused into a single pragmatic group, having important signs or symptoms in common. I do not need here to argue further for placing Syphilopsychoses first in the list and will merely refer to the case book on "Neurosyphilis" which Solomon and the writer issued in 1917 along these general lines.

As for what I have called the Hypophrenoses, or in practice, the hypophrenias, let me here set at rest any question of nomenclature. (I have argued somewhat in detail for the value of the term hypophrenia in a brief paper called "Suggestions in the Nomenclature of the Feeble-mindednesses," published in "Mental Hygiene," 1918.) I would here lump the American Medico-Psychological Association's Group 20, Psychoses with Mental Deficiency, and Group 22 (*e*), the not insane subgroup of Mental Deficiency without Psychosis, simply because the slightest evidence of any kind or degree of mental deficiency appears to me to have extraordinary importance. The plane of division between mental deficiency of a committable kind and mental deficiency of a non-committable kind is not a particularly important plane of distinction in the first task of diagnosis. Consider, for example, how little importance attaches to this matter in the field of delinquency, at least in our early confrontation of criminal phenomena.

Just as the Syphilopsychoses were placed first on account of the relative diagnostic reliability of the present-day tests, so the feeble-mindednesses are placed second, because of the relative reliability of modern mental tests and estimates of mental capacity, based upon observations of educability and functional capacity in schools or other standard environments. In practice hardly a case gets on nowadays without the performance of mental tests in all cases lucid enough to warrant them.

The epileptic psychoses correspond with the American Medico-Psychological Association's Group 17, Epileptic Psychoses, and Group 22, the not insane group of Epilepsy without Psychosis. Again the American Medico-Psychological Association's distinction seems to be founded upon the question of committability and not upon the very possibly more important therapeutic lines of distinction. Epilepsy is placed early in this pragmatic ordering of groups, because in practice it appears to me that epilepsy is so often forgotten and also because the clinical history of epilepsy or epileptoid states is often so relatively good compared with the clinical history of sundry other symptoms given us by lay witnesses.

Again, I have lumped in my pragmatic ordering the alcoholic, drug and poison psychoses, because the question as to their occurrence can be lodged practically in a single sentence. The American Medico-Psychological Association's groups 9 and 10 roughly correspond with what I have termed the Pharmacopsychoses. (Nomenclature is not here in question, but it would appear that the Greek term in the first half of the word "Pharmacopsychoses" corresponds pretty exactly with both the alcohol and drugs involved in this group and the poisons there specified.)

The next fusion process in Group V, which I have termed the Encephalopsychoses, may seem a good deal more questionable to the practical worker, but I consider that a group which takes into account those neurological signs which we think of under (a) signs of heightened intracranial pressure and (b) signs of reflex asymmetry, and the like, is a practical grouping. This group is in fact the neurologist's group. The technique of determining the focal brain lesion group of psychoses is the technique of determining the existence of focal brain lesions which are partly responsible for or are indicators of the cause of the mental symptoms, in a given case. I here lump the American Medico-Psychological Association's Group 1, Traumatic Psychoses, Group 3, Psychoses with Cerebral Arteriosclerosis, Group 6, Psychoses with Huntington's Chorea, Group 7, Psychoses with Brain Tumor, and the larger part of Group 8, Psychoses with other Brain or Nervous Disease (excluding Tabes).

It seems to me that the practical decision whether a case belongs in any one of these five American Medico-Psychological Association's groups depends upon the neurologist's clinical technique and largely upon whether the neurologist can find signs of heightened intracranial pressure or signs of reflex disorder, asym-

metry, and the like. It seems to me that the process of getting at the question whether such an encephalopsychosis is traumatic, arteriosclerotic, neoplastic, etc., is a question logically subsequent to the decision that the case belongs in the group as a whole. It may be inquired whether general paresis and cerebral syphilitic psychoses ought not to be classified as Encephalopsychoses. It is true that from one etiological point of view, they might well be so classified; but we are not here attempting an etiological classification. We are trying to make a pragmatic classification that shall be of practical diagnostic and therapeutic value. There can be no question that from the standpoint of therapeutics, it is decidedly important to eliminate logically the question of syphilis before we come to deal with other forms of encephalic disease producing psychosis. The same principle of order in diagnosis may now be applied of course to the subgroups or genera in the Encephalopsychoses, and some arguments in this direction have been given in the paper above mentioned, "The Genera in Certain Great Groups or Orders of Mental Disease." But to proceed to the more general ordering. Having got rid of the syphilitic mental diseases, the almost (in some form) omnipresent question of feeble-mindedness, the hardly less frequent question of some epileptic or epileptoid condition or equivalent, having disposed of the alcohol, drug and poison question, having applied the neurologist's technique and eliminated such matters as heightened intracranial pressure and reflex asymmetry, in what order shall we consider the remainder of psychiatric nosology?

Practically, I feel that the next question is that which the internist might best solve, and for this purpose I would group together American Medico-Psychological Association's Group 12, Psychoses with other Somatic Disease, with its seven subgroups, and Group 11, Psychoses with Pellagra. I have given some arguments for the order in which these subheads under the symptomatic psychoses, Group VI, might well be considered, in the paper above mentioned.

Having now put out of the way the internist's contribution, how shall we attack the numerically smaller, but logically more difficult, residuum? Practically, I think at this point one should try to eliminate all the involutional, presenile and senile questions. As for involution-melancholia itself, it is possibly of little moment whether it be classified under the presenile and senile group or under the manic-depressive group. We shall get the entity out in any event by our orderly approach. With some

misgivings, I have, however, preferred to place the involution-melancholia group below with the manic-depressive psychoses, leaving the other presenile psychoses to be grouped with the senile ones. It is of special value in this method of attack that we have pulled so far apart the arteriosclerotic conditions from the senile ones.

We now approach the most difficult questions. I would practically place the schizophrenic question ahead of the cyclothymic question, because it seems to me that dementia præcox symptoms blanket manic-depressive symptoms from a diagnostic standpoint. Otherwise expressed, is it not in general true that practically any psychopath may show at times the characteristic mania or depression of the cyclothymic, but is it at all so true that characteristic dementia præcox symptoms appear in every form of mental disease? That schizophrenic symptoms do so appear, in the midst of, *e.g.*, manic-depressive psychosis, at least occasionally and as a rule singly, cannot be denied. But that any characteristic constellation of schizophrenic symptoms appears in any other disease than dementia præcox must be regarded as very doubtful.

Having then eliminated schizophrenia, that is, American Medico-Psychological Association's Group 15, and a part possibly of Group 16, namely, the part called Paranoic Conditions, I would then proceed to the cyclothymic conditions which appear in the American Medico-Psychological Association's classification as Group 13, Manic-depressive Psychoses, and Group 14, Involution-Melancholia.

It seems to me that in practical discussion in early phases of mental disease, it is very salutary to fuse the question of manic-depressive psychosis and involution-melancholia, so that the diagnostic disputant might present to his audience all the phenomena that he thinks are cyclothymic at the outset.

We have now accounted for all the American Medico-Psychological Association's groups except a portion of 16, 18, 19 and 21 and the larger part of 22. Having eliminated the cyclothymic states, I would proceed to eliminate the Psychoneuroses, Group 18 of the American Medico-Psychological Association's classification. Then, for my part, I cannot see any gospel for the orderly diagnosis of the remainder of the so-called entities, which appear to me to be of a very nondescript and variegated description. For example, paranoia seems to me not to have been proved to be of schizophrenic nature, and, although some forms of it appear

to resemble chronic mania that some might press into the cyclothymic division, on the whole, would it not be wiser to relegate paranoia to an extremely doubtful, special and unresolved group of conditions? As with Group 16, Paranoia, so with Group 19, the American Medico-Psychological Association's group of Psychoses with Constitutional Psychopathic Inferiority, this phrase means much and little. It has successfully borne an enormous weight in the matter of exclusion of certain immigrants. It is doubtless of great value in the matter of recruits. It is an ore for future psychiatric mining; but for my part I would not like to make the diagnosis until I had excluded all the previous ten great groups that I have just mentioned.

Of course the undiagnosed psychoses, the American Medico-Psychological Association's Group 21, also belong in my chosen "ragbag" Group XI, and there might appear Group 22 (*d*), Constitutional Psychopathic Inferiority without Psychosis, and Group 22 (*f*), Others to be specified.

From the general results of this analysis, would it not be possible to say that the American Medico-Psychological Association's classification, relatively successful as it is from the standpoint of a reference table for statistical purposes, and relatively successful as it may be in representing a reputable German etiological ordering, can be used with a certain readjustment in a practical orderly manner for the purpose of pragmatic diagnosis, having in mind special treatment and management as its aim? In short, may we not use this classification of the American Medico-Psychological Association like many others, by throwing its groups and subordinate clinical types into pragmatic groups arranged in key form, following the practical standards of, *e.g.*, Gray's "Botany"?

We thus arrive at the following general considerations concerning the recent American classifications in psychiatry: —

1. There is an extraordinary unanimity on the part of American psychiatrists as to the constituents of psychiatric nosology and this despite a number of nomenclatural divergences.

2. The classification proposed by the American Medico-Psychological Association and adopted by the United States government for practical war work is a suitable reference table for statistical purposes of the major groups and clinical types of mental disease.

3. The classification may be somewhat inadequate for the purpose of general and psychopathic hospital practice, but a slight revamping might resolve this difficulty.

4. The American Medico-Psychological Association's classifica-

tion appears to follow an etiological ordering borrowed ultimately from reputable German sources, and this etiological ordering is a good one if a certain etiological viewpoint is in mind.

5. The question is raised, Whether it would not be better to order the groups and types of mental disease in a pragmatic rather than a theoretical order, that is, in an order having therapy in mind rather than an order having etiology in mind?

6. The writer proposes such a pragmatic order of certain great groups or orders of mental disease, corresponding with the botanical or zoölogical orders.

7. The writer finds that the American Medico-Psychological Association's twenty-two groups might well be compressed for practical purposes of diagnosis into eleven groups. He finds that the clinical types subordinated to the great groups of the American Medico-Psychological Association's classification correspond more or less accurately to the genera of a botanical or zoölogical classification, and proposes that in practice these subgroups be considered in order, in general accordance with the principles of botanical or zoölogical taxonomies.

8. This question of how to use a classification may be defined as the question of a key to the grouping of diseases. The key question is entirely independent of the classification or reference table of entities and entity groups, and both the key question and the classification-list question are independent of questions of nomenclature and terminology. Moreover, the writer would insist that the logical process of *diagnosis per exclusionem in ordine* here developed has nothing whatever to do with the order in which data can or should be collected.

AN ANALYSIS OF THE ACCURACY OF PSYCHOPATHIC HOSPITAL DIAGNOSES.*

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Studies of the outcome in psychiatric cases are obviously very important, especially where, as is true at the Psychopathic, diagnoses are based upon symptoms and the longitudinal section of the patient's life before admission. Only in a few cases do we have opportunity to see the final outcome and so check the diagnosis ourselves. The Kraepelinian conception of mental disease, to which we attempt to adhere, was largely founded upon a study of the terminus of pathological states. Accordingly, one important zone of psychiatric advance, for us at least, lies in a study of the outcome of the cases we see here.

The best method available to us for doing this is to follow those cases (about 60 per cent of our admissions) which are committed to the State institutions. This gives us information concerning outcome, and also gives us an opinion independently formed, often, as can easily be shown, with diagnostic standards quite different from our own.

Accordingly, we have devised a follow-up scheme by which we secure from each institution its diagnosis and a brief note concerning the condition of the patient three months, six months and one year after commitment. Of course in the organic cases and those already demented when seen by us, one note is usually sufficient unless there be disagreement in diagnosis. But in the active acute cases it is best to secure the full series. In this way conflicting diagnoses in the same case are sometimes given by the institution or institutions.

Advance in psychiatry can only come, as I have pointed out elsewhere,¹ if we carefully study the whole patient; make correct

* A contribution from the Psychopathic Hospital, series of 1918. Read at the seventy-fourth annual meeting of the American Medico-Psychological Association, Chicago, June 4 to 7, 1918.

symptomatic diagnoses, and then check such diagnoses against outcome. Furthermore, the real test of our diagnostic skill lies in applying such a rigorous system of inquiry regarding the further history of our patients. An additional value to such follow-up studies is that they reveal errors in working technique which need modification. They keep the workers keyed up to do the best possible work, and tend to establish the habit of careful analysis. Furthermore, they show which groups of cases are most difficult of diagnosis; tend to establish causes for errors; lead to a wider co-operation and understanding between institutions; lead to more uniform standards of diagnoses. The application of uniform standards of diagnoses is really of much greater value than the selection of a uniform statistical grouping for patients.

Two previous studies of Psychopathic Hospital diagnoses have appeared. In 1914 Southard and Stearns² published a report dealing with the accuracy of Psychopathic Hospital diagnoses in 1913. The study was carried out by following the patients committed from the Psychopathic Hospital to other State institutions, and ascertaining the diagnosis of the institution to which the patient was sent. They found that about one case in five got no diagnosis at the Psychopathic, and that of those cases that had received a diagnosis, one in four had the diagnosis altered in the next State hospital. They found that a residuum of about 6 per cent remained unclassified. They considered that the most difficult field of diagnosis was shown to be that of dementia præcox and manic-depressive psychoses, and offered some abstracts of the more interesting individual patients. They were struck by the few changes made in the Psychopathic diagnosis of manic-depressive.

Recently the writer³ has published a paper dealing with the accuracy of early diagnoses within the Psychopathic Hospital. This was done by checking the diagnosis in the admission office against the rounds, or staff meeting, or discharge diagnosis in the same patient. Of course this represents the checking of one diagnostic standard against itself and not against another standard, as is obtained when the Psychopathic Hospital diagnosis is checked against the diagnosis of some other State institution. It is really a study in the accuracy of snap diagnoses in psychiatry, and it was shown that a high percentage of early diagnostic accuracy depends upon accurate observation, careful interpretation and sufficient information.

In this paper data are presented dealing with the diagnoses

in 419 cases committed to some State hospital, after a residence in the Psychopathic Hospital of a few days to a month or more. The patients forming this group were committed during the period from Nov. 1, 1916, to June 1, 1917, and were reported on by the other institutions once, twice or three times. All cases with change in diagnosis were reported on at least twice in order to make sure whether the institution would change its diagnosis. So the group has been followed covering periods from a year to a year and a half. I wish here to express our thanks to the superintendents of the various State hospitals who, by their reports, made this study possible.

TABLE I. — *The Errors shown by Hospitals.*

[Omitting Psychopathic unclassified and undiagnosed.]

| | Agree. | Disagree. | Total. | Per Cent Error. |
|----------------------------|--------|-----------|--------|-----------------|
| 1. Boston, | 125 | 42 | 167 | 23.7 |
| 2. Worcester, | 67 | 17 | 84 | 20.2 |
| 3. Westborough, | 32 | 14 | 46 | 30.4 |
| 4. Taunton, | 21 | 4 | 25 | 16.0 |
| 5. Danvers, | 22 | 4 | 26 | 15.4 |
| 6. Medfield, | 9 | 4 | 13 | 30.7 |
| 7. Foxborough, | 2 | 1 | 3 | — |
| 8. Private, | 1 | 2 | 3 | — |
| 9. McLean, | 3 | 2 | 5 | — |
| 10. Northampton, | 1 | — | 1 | — |
| 11. Grafton, | 15 | — | 15 | — |
| 12. Norfolk, | 1 | 1 | 2 | — |
| 13. Monson, | 6 | — | 6 | — |
| Total, | 305 | 91 | 396 | 23.0 |

Of the 419 patients, 23, or 5.5 per cent, received no definite diagnosis at the Psychopathic, *i.e.*, were left “unclassified,” leaving 396 patients receiving a definite diagnosis.

Table I shows for each institution the number of patients sent, the number in which the diagnosis agreed, and the number in which the diagnosis disagreed with the Psychopathic. The table shows that in 91, or 23 per cent, the diagnosis was changed, leaving 305 in which the diagnoses agreed. This figure is very near that found by Southard and Stearns.

In Table II are found by diagnosis and by institution the agreements in diagnosis so that an idea may be had of the type of cases sent to each institution.

TABLE II. — *To show the Agreements in Diagnosis by Hospitals.*

[Excluding unclassified.]

| | Total. | 1. Boston. | 2. Worcester. | 3. Westborough. | 4. Taunton. | 5. Danvers. | 6. Medfield. | 7. Foxborough. | 8. Private. | 9. McLean. | 10. Northampton. | 11. Grafton. | 12. Norfolk. | 13. Monson. |
|--|--------|-----------------|----------------|-----------------|-------------|-------------|--------------|----------------|-------------|----------------|------------------|--------------|--------------|-------------|
| Dementia præcox, | 155 | 55 ¹ | 39 | 22 | 12 | 12 | 7 | 2 | 1 | 3 ² | 1 | 1 | - | - |
| Manic-depressive, | 42 | 24 | 5 ³ | 5 ⁴ | 2 | 5 | - | - | - | - | - | 1 | - | - |
| Neurosyphilis, | 36 | 11 | 12 | 1 | - | 4 | - | - | - | - | - | 8 | - | - |
| Acute alcoholic psychosis, | 8 | 2 ⁵ | 3 ⁴ | - | 2 | - | - | - | - | - | - | - | 1 | - |
| Chronic alcoholic psychosis, | 7 | 5 ⁶ | 1 | - | 1 | - | - | - | - | - | - | - | - | - |
| Senile dementia, | 14 | 8 | 4 | 2 | - | - | - | - | - | - | - | - | - | - |
| Epilepsy, | 12 | - | 1 | - | - | - | - | - | - | - | - | 5 | - | 6 |
| Arteriosclerotic, | 12 | 7 | - | 1 | 2 | 1 | 1 | - | - | - | - | - | - | - |
| Korsakow's, | 7 | 5 | 1 | - | 1 | - | - | - | - | - | - | - | - | - |
| Paranoid condition, | 3 | 2 | - | - | - | - | 1 | - | - | - | - | - | - | - |
| Postpuerperal, | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Psychoneurosis, | 1 | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| Not psychotic, | 7 | 5 | 1 | - | 1 | - | - | - | - | - | - | - | - | - |
| Total, | 305 | 125 | 67 | 32 | 21 | 22 | 9 | 2 | 1 | 3 | 1 | 15 | 1 | 6 |

¹ Four cases first called manic-depressive, and one infection-exhaustion psychosis, all eventually called dementia præcox.

² One case first called psychopathic, but on second inquiry the diagnosis agrees.

³ Two cases first called dementia præcox, but on second inquiry the diagnosis agrees.

⁴ One case first called dementia præcox, but on second inquiry the diagnosis agrees.

⁵ One case first called manic-depressive, but on second inquiry the diagnosis agrees.

⁶ One case first called presenile dementia, but on second inquiry the diagnosis agrees.

Table III presents all of the data concerning diagnosis in readily accessible form. This shows, for each psychopathic diagnosis, the diagnoses made at the other institutions. The interesting features will be pointed out in the discussion below.

TABLE III. — *The Changes in Diagnosis between Psychopathic and State Hospitals.*

[The numbers at the tops of the columns correspond to the numbers assigned in the left-hand column to the Psychopathic Hospital diagnoses.]

| PSYCHOPATHIC HOSPITAL DIAGNOSIS. | OTHER HOSPITALS DIAGNOSES. | | | | | | | | | | | | | | | | | | | | |
|--|----------------------------|-------------------|-----------------|----------------------------|------------------------------|------------------|-----------|-----------------------------|----------------------|--|---------------|--------------------------|----------------|----------------------|-------------------|-------------------------|--------------------------------|-------------------|-----------------|-------------------------|--|
| | Dementia Præcox. | Manic-depressive. | Neurosyphilis. | Acute Alcoholic Psychosis. | Chronic Alcoholic Psychosis. | Senile Dementia. | Epilepsy. | Arteriosclerotic Psychosis. | Korsakow's Syndrome. | Paranoia and Unclassified Paranoid States. | Unclassified. | Postpuerperal Psychosis. | Not Psychotic. | Presenile Psychosis. | Toxic-exhaustion. | Neurasthenic Psychosis. | Psychosis + Feeble-mindedness. | Organic Dementia. | Psychoneurosis. | Involution Melancholia. | |
| 1. Dementia præcox, | 155 | 14 | - | 1 | 1 | 1 | - | - | - | 2 | 4 | - | 4 | - | 1 | - | 1 | - | - | - | |
| 2. Manic-depressive, | 11 | 42 | - | 1 | 1 ² | - | - | 1 | - | - | 1 | - | 1 | - | 1 | 1 | - | - | - | - | |
| 3. Neurosyphilis, | 39 | 2 | 36 ¹ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 4. Acute alcoholic psychosis, | 12 | 1 | - | 8 | 7 | - | - | 1 | - | - | 1 | - | 2 | - | 1 | - | - | - | - | - | |
| 5. Chronic alcoholic psychosis, | 10 | 1 | - | - | - | 14 | 12 | 1 | - | - | - | - | 1 | - | - | - | - | 1 | - | - | |
| 6. Senile dementia, | 18 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 7. Epilepsy, | 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 8. Arteriosclerotic psychosis, | 22 | - | - | - | - | 3 | - | 12 | 7 | - | 1 | - | - | - | 1 | - | - | 2 | - | - | |
| 9. Korsakow's syndrome, | 11 | - | - | 1 | 1 | - | - | - | - | 3 | 1 | - | - | - | - | - | - | - | - | - | |
| 10. Paranoia and unclassified paranoid states, | 9 | - | - | 1 | - | - | - | 2 | - | 2 | 5 | - | 1 | - | 2 | - | 1 | 2 | - | 1 | |
| 11. Unclassified, | 23 | 6 | - | 1 | - | - | - | - | - | - | - | 1 | 7 | - | - | - | - | - | - | - | |
| 12. Postpuerperal psychosis, | 2 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 13. Not psychotic, | 9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 14. Presenile psychosis, | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 15. Toxic-exhaustion, | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 16. Neurasthenic psychosis, | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 17. Psychosis + feeble-mindedness, | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 18. Organic dementia, | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 | - | |
| 19. Psychoneurosis, | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | |
| 20. Involution-melancholia, | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 21. Symptomatic psychosis, | 1 | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | |
| 22. Chronic toxic psychosis, | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 23. Traumatic psychosis, | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 24. Senile delusional psychosis, | 1 | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Total, | 419 | 63 | 36 | 12 | 12 | 19 | 12 | 19 | 7 | 7 | 14 | 1 | 16 | - | 6 | 1 | 2 | 6 | 1 | 2 | |

¹ A psychopathic "lucic paranoid" is called "general paresis + paranoid dementia præcox."² Called "chronic alcoholic psychosis" at Psychopathic.³ Including three unclassified paranoid, one paraphrenia and two paranoia Psychopathic diagnoses.

Table IV is a summary in which the results in all psychopathic groups having more than 10 cases are brought together. It will be seen that the error in dementia præcox is low, while the error in manic-depressive is high; this in contrast to the findings of Southard and Stearns. In certain smaller groups the error is also high, as in the acute alcoholic psychoses and in the arterio-sclerotics. These figures, however, are less valuable because of the small number of cases concerned, but perhaps indicate an overstressing of certain symptoms or symptom-complexes in the diagnosis of these conditions.

TABLE IV. — *Summary by Diagnoses.*

[Arranged in order of diagnostic accuracy.]

| | Psycho-
pathic
Hospital
Diagnosis. | OTHER INSTITUTIONS DIAGNOSES. | | |
|---|---|-------------------------------|-----------|-----------------------|
| | | Agree. | Disagree. | Per Cent
Disagree. |
| 1. Epilepsy, | 12 | 12 | — | — |
| 2. Neurosyphilis, | 39 | 36 | 3 | 7.7 |
| 3. Dementia præcox, | 183 | 155 | 28 | 14.8 |
| 4. Senile dementia, | 18 | 14 | 4 | 22.3 |
| 5. Manic-depressive, | 60 | 42 | 18 | 30.0 |
| 6. Chronic alcoholic psychosis, | 10 | 7 | 3 | 30.0 |
| 7. Acute alcoholic psychosis, | 12 | 8 | 4 | 33.3 |
| 8. Korsakow's, | 11 | 7 | 4 | 36.4 |
| 9. Arteriosclerotic, | 22 | 12 | 10 | 45.5 |

The data presented in these tables are most conveniently discussed according to the psychiatric groups involved. The points of major interest are found in the cases with change in diagnosis. Accordingly, the greater stress is laid on these. In each case with recorded error, I have analyzed the Psychopathic Hospital record and have based a *personal opinion* as to diagnosis on that. Wherever possible, I have also either seen the patient or the record from the other institution. This, however, has only been feasible with those patients committed to the Boston State Hospital, representing less than half of the number of errors. I have tried to make an impartial analysis and an unbiased criticism in these cases, with the aim of locating the causes for error if possible.

Group I. Dementia Præcox. — This diagnosis, made 183 times at the Psychopathic, was concurred with in 155 cases and disa-

greed with in 28. This amounts to an error in 14.8 per cent of cases — well below the error previously recorded. In 28 additional cases another Psychopathic diagnosis was changed to dementia præcox. So, if we incorrectly call 15 per cent of cases dementia præcox, and miss 15 per cent, our error becomes rather high. Of course the last error is somewhat less serious than the first, since the chances are that a better prognosis was given with a non-dementia præcox diagnosis.

Of the 28 "errors," four have been left "unclassified" by the institution to which they were sent, leaving 24 cases in which the diagnosis seemed erroneous.

Of these, 14 are called manic-depressive, 2 are in hospital "unimproved," 2 in hospital "improved," 1 was discharged "improved," and 9 were discharged "recovered." It may be noted that 1 case was discharged as a recovered manic-depressive only to be returned to the institution when a diagnosis of dementia præcox was made. This is, of course, not counted as an error. In 6 cases the first diagnosis returned from the other institution was something other than dementia præcox, usually manic-depressive, but on second or third inquiry the diagnosis was changed to dementia præcox. These cases, again, are not counted as errors. It is possible that of the 4 cases now in hospital a few may yet be called dementia præcox.

In examining our records on these cases I find that in 3 the record seems to me typical for manic-depressive, yet a diagnosis of dementia præcox was made. So far as I can see, the misleading symptoms do not appear in the record, however clearly they may have appeared in the patient. In 2 additional cases I cannot form an opinion from our records, as they do not give a sufficiently clear analysis of the case. Neither case was hallucinated, but both were called "indifferent."

In 2 cases I should judge from the history and examination that neither diagnosis was entirely correct, since 1 case was postpuerperal and one postoperative. The postpartum case, in particular, seems to be one of the toxic-exhaustion cases with recovery. The other case presented ideas of reference for a year before the sudden onset of an excited, hallucinated, deluded state following etherization. Here the confusion and hallucinations, with later recovery, point more to a toxic psychosis than to dementia præcox or manic-depressive.

The remaining 7 cases are of some interest, and may be briefly abstracted: —

CASE 1. — A man, age forty-four, first attack of mental trouble. Always rather seclusive, he suddenly became destructive, with ideas of electricity, choking, visual and olfactory hallucinations. He was depressed, emotional, self-accusatory, had many somatic and sex ideas, ideas of influence and hallucinations for several days. Remained oriented. Except for the hallucinosis he seemed to be a case of manic-depressive. We called him dementia præcox. Six weeks later he had been discharged "recovered." Here the hallucinatory episode was allowed too much weight in the diagnosis.

CASE 2. — This unusual case is so complex that I am not satisfied that either diagnosis is correct. In 1913 he was committed, a diagnosis of manic-depressive made and he was discharged "recovered." In 1915 he was at this hospital; provisional diagnosis — dementia præcox, determined — delirium tremens. In 1916 he was twice here with a diagnosis of acute alcoholic hallucinosis. In November, 1916, he was admitted for the third time that year. He had many fantastic delusions and numerous hallucinations. At our staff meeting, five preferred dementia præcox to manic-depressive; two, manic-depressive; three, alcoholic psychosis; two, unclassified. Committed to another hospital, a diagnosis of manic-depressive was made, and he was discharged "recovered." His drinking may have been due to his manic-depressive attack, but it seems that his psychosis was markedly colored by the alcohol.

CASE 3. — At thirty-nine this woman had an attack in which she was violent, fearful, self-accusatory and called the dead. This lasted for four months. At forty she had a similar attack of two weeks' duration; again at forty-two. At forty-three she had an attack of four months' duration, this time influenced by alcohol. She was described as normal between attacks. At forty-four she was admitted with auditory and visual hallucinations and ideas of electrical influence. There was no intelligence defect. She was indifferent; at first disturbed, then quiet, inaccessible, mute, resistive and had to be tube fed. During a month this condition continued. After transfer she was discharged as recovered from a manic-depressive attack.

If we grant that the observations were correct, and there was no history of alcohol, then our diagnosis was symptomatically correct; although the history would indicate a good prognosis for the attack.

CASE 4. — The mother of this girl developed a paranoid psychosis at about fifty-five. The patient was disappointed in love; then became suspicious, deluded and worried. She became hallucinated, with conduct disorder based on this. She was frightened, agitated, depressed, resistive, hallucinated, suspicious, mute, deluded. She was impulsive, at times excited. This continued through her stay of two weeks. After transfer she was discharged as a recovered manic-depressive.

With the exception of the rather normal emotional response to the ideas and hallucinations, our diagnosis would seem to be symptomatically correct, but not verified by outcome.

CASE 5. — An interesting case of "late katatonia" occurring in a man of fifty, with mental changes for a year and a previous attack with hallucinations. He was hallucinated and showed cerea flexibilitas, with later recovery.

CASE 6. — In this man the question of manic-depressive-mixed might be raised. He had gradually changed through three years, and when seen at thirty-eight was indifferent, irritable, deluded, hallucinated, impulsive, self-accusatory and somewhat depressed. In about three months was discharged "improved," and is now recorded as "recovered."

CASE 7. — This patient at twenty-nine had an attack in which no hallucinations were demonstrable, but she was disturbed and later mute and resistive. She continued to show many queer signs, but has now a "well-connected depression in which there seems to be nothing schizophrenic." Hence she is regarded as a case of manic-depressive.

The next important group in which the diagnosis was changed is the group of four cases called "not psychotic." Two of these were called "constitutional inferiority" and two were called "feeble-minded." There is no doubt of this groundwork for the mental state in all four cases, but the symptom analysis of the four certainly shows a pathological mental state hardly to be explained by just this diagnosis. I am not arguing that they were necessarily cases of dementia præcox, but that there was something added. That the committing physicians who visit this hospital are very cautious about committing cases on such grounds alone is an additional point in favor of the view that there was a psychotic state. At all events, it is perfectly clear that episodes of various types occur in such patients, but it is not perfectly clear whether they are always a part of the original state, or represent a new process.

One case in particular, studied by us for more than a month and twice presented at staff meeting, was called an imbecile at the hospital to which he went, although because of agrammatisms, neologisms and what might be called neograms and certain other schizophrenic features, we had made a diagnosis of dementia præcox which evidently went back for a considerable distance into his youth. There was a possibility of an organic condition. Accordingly, one would hardly be satisfied with the simple diagnosis of imbecility in a complex case of this type.

One case was called delirium tremens, but is still in the hospital a year and a half after commitment, where he is regarded as improved, and is working steadily in the kitchen. If it were really a simple case of delirium tremens one would hardly expect

that he would spend a year in a hospital. Our record says there is no alcoholic history, that he was apathetic, had ideas of persecution and somatic delusions. He was not at any time confused. All of these are points against the diagnosis of delirium tremens.

One case which we called dementia præcox with senile changes was called senile dementia. He was sixty-eight, had been at Worcester at eighteen, at the Boston State Hospital at thirty and in some other asylum at forty. For many years, at least twelve, he had been foolish, had ideas of persecution, confusion of recent memory, was pleasant, quiet and there were probably auditory hallucinations. The correct diagnosis would depend upon the accuracy of the history of changes for many years.

Two cases called by us paranoid dementia præcox were called unclassified paranoid condition. For the discussion of the difficulties in the way of diagnosis in the paranoid group, see below, under "Unclassified Paranoids."

One case was called a toxic-exhaustion psychosis from morphine, and this diagnosis seems to have been correct, although we got no history of any morphine use.

One case was a postpuerperal case occurring in a negro girl, but with all the characteristics of dementia præcox. However, the institution to which she was sent made a diagnosis of psychosis plus feeble-mindedness, and regarded her not as deteriorated but as having been originally of low level. Of course, the diagnosis psychosis plus feeble-mindedness is really equivalent to "undiagnosed" or "unclassified," since it does not attempt to state the type of psychosis present.

Group II. Manic-depressive. — In this group there were proportionally many more changes than in the dementia præcox group. Our diagnosis was changed in 18, or 30 per cent of the group. In addition, 21 cases called something else by us were finally diagnosed manic-depressive by the other institutions.

The most interesting change is that from manic-depressive to dementia præcox, made in 11 cases. Two cases were discharged from the hospital with the diagnosis dementia præcox as "recovered"; one was discharged as "improved." In all three cases the history of previous attacks or the examination here indicates manic-depressive to me.

One case has died, and our record is to me clearly that of a paranoid dementia præcox and not manic-depressive, as we diagnosed it.

The other 7 cases remain in hospital "unimproved." Of these,

one was called by us "chronic mania," which is probably really dementia præcox with long-continued excitement. Three cases I should call dementia præcox from reading the Psychopathic Hospital record. One case has an involution psychosis with uncertain features. One case is clearly a manic-depressive with three attacks, a complete recovery between each, and typical symptoms of manic-depressive, manic. The last case had a previous attack with recovery, then a second attack at forty-one. There were certain slight changes in the spinal fluid, indicating a probable organic disease. There were some symptoms of a præcox type, but the question of organic brain disease cannot be easily ruled out.

Accordingly, we can summarize the manic-depressive to dementia præcox changes by saying that in 4 cases the changes in diagnosis may be seriously doubted for reasons given above; 1 case is a chronic mania, which is probably dementia præcox; that 4 cases appear to be dementia præcox from the Psychopathic Hospital records, and in the other 2 cases the change in diagnosis may be questioned, but it is possibly correct.

One case of agitated depression at the involution period was called a postoperative psychosis, despite the absence of consciousness disorder and hallucinations and a persistence of the process for two years. In this case I should certainly believe involuntional melancholia to be the proper diagnosis.

A case with three attacks of manic-depressive psychosis spent two of them at the same hospital, which finally diagnosed his case alcoholic dementia, despite the rather typical manic picture shown.

Another very interesting manic case, with unusual features pointing to præcox, was called an alcoholic psychosis, despite the fact that our rather elaborate study of the case for three weeks failed to reveal more than a minimal use of alcohol. The symptoms were chiefly those of mania.

A hypomanic case was called a defective delinquent. To be sure, the boy was both defective and delinquent, but at the time of commitment he was certainly hypomanic. It may be noted that the diagnosis "defective delinquent" needs to be handled with care. Such patients may also be, or become, insane — a fact frequently overlooked. From the same institution I have recently obtained a diagnosis of defective delinquent in a straight out-and-out paranoid case that has been committed three times to State hospitals.

One case of depression was called a neurasthenic psychosis. With this diagnosis I have no quarrel to make, since, as I⁴ have recently pointed out, the differential diagnosis between psychosis and psychoneurosis is often extremely difficult to make and, furthermore, many so called psychoneurotics are really insane in the technical sense of the word.

Group III. Neurosyphilis. — One would not expect to find any diagnostic errors in this group, except within the group itself (*i.e.*, cases diagnosticated paresis turn out vascular lues, etc.), because of the exact laboratory methods which are available for aid in diagnosis. However, there is a group of cases in which we find a psychosis, or even no psychosis, plus the serology of neurosyphilis, the latter producing no symptoms which can be directly attributed to it. Such cases have been reported in considerable numbers (see Barrett,⁵ Lowrey,^{6,7,8} Southard and Solomon^{9,10}), and several more such cases could now be added to the list.

Of the three errors in diagnoses which appear in our table only one, the case called alcoholic dementia, is of this type. This case was diagnosed "chronic alcoholic psychosis + neurosyphilis" at the Psychopathic, from which it will be seen that the major importance of alcohol was recognized, but the presence of neurosyphilis was also indicated. The two cases called dementia præcox by other hospitals are clearly, from our records, dementia præcox, and there is no serological evidence to back up a diagnosis of neurosyphilis, and I do not understand how such a diagnosis was made. A final case, which I have not classed as an error, was called "luetie paranoid" at the Psychopathic, and "general paresis + paranoid dementia præcox" at the other hospital. I should feel that our diagnosis was probably more logical. At any rate, I should want some extremely good evidence of the existence of the usual symptoms of paresis before I made a double diagnosis. However, both diagnoses recognized the relationship: neurosyphilis + paranoid psychosis.

Group IV. Acute Alcoholic Psychosis. — Of the four errors in this group of 12, one in which we raised a question of dementia præcox has been discharged as self-supporting, although somewhat dull. Another case called manic-depressive, manic, is said to show blunting, probably due to the use of alcohol. One case called by us alcoholic hallucinosis has been discharged recovered from a toxic insanity. Of course alcoholic hallucinosis is a toxic psychosis, but is a more exact diagnosis than merely *toxic*.

Another patient called by us alcoholic hallucinosis has been discharged as a recovered case of dementia præcox. We are all aware that in a typical case of alcoholic hallucinosis the differential diagnosis is alcoholic hallucinosis *versus* paranoid dementia præcox. The differentiation is to be based upon three factors: (1) the history of the abuse of alcohol in a person who was previously regarded as normal; (2) the normal emotional response to the ideas and hallucinations entertained; (3) the outcome in recovery in from four to six weeks, with good insight into the past mental illness. Accordingly, I should suspect that in two and perhaps three of these cases the Psychopathic diagnosis was more nearly correct, judging by the history, symptoms and outcome, than the diagnosis in the other institutions.

Group V. Chronic Alcoholic Psychosis. — In the chronic alcoholic group the 2 cases in which the diagnosis was changed to "not psychotic" did not present enough deterioration at the Psychopathic Hospital to be committed as insane, but were sent to the institutions as "habitual drunkards." So that, although I have classed them as errors in the table, they are really not such, since in both cases the other institution makes a diagnosis of "inebriate." The third case, however, is a rather interesting one of aphasia, in which the other hospital diagnosis of arteriosclerosis seems to be correct.

Group VI. Senile Dementia. — One case was diagnosed as an organic dementia, which really amounts to saying that there is dementia due to some type of organic disease. It does not, however, make any exact diagnosis of the organic disturbance. A second case was called manic-depressive psychosis, apparently due to some history which we had not obtained. In a third case the diagnosis was changed to cerebral arteriosclerosis. Of course the differential diagnosis between senile dementia and arteriosclerotic psychosis is not always easy, and in many cases represents a question of evaluation of indirect evidence more than anything else. One interesting case, which we called a senile psychosis, was discharged "improved" with a diagnosis of "not insane" from the hospital to which she was sent. This woman's daughter, who was about forty years of age, had a marked paranoid psychosis of slow development. The two women lived alone, and the daughter convinced the mother of the reality of her delusions and hallucinations, and the old lady firmly believed them. We called it a senile psychosis, although she was not demented.

Group VII. Epilepsy. — There were no disagreements in the diagnosis of epilepsy, and we missed no diagnoses of epilepsy. This is probably to be explained by the fact that the epileptic cases which we see have usually a long history of fits, or perhaps have some while they are in the institution. There has not always been verbal agreement as to the diagnosis of epileptic psychosis, but that, of course, may be due to a clearing up of the psychotic state at about the time of discharge to the other institution.

Group VIII. Arteriosclerotic Psychoses. — On the surface it appears that our least accuracy in diagnosis lies in the field of the arteriosclerotic psychoses. The diagnoses returned by the other institutions concurred with us in only 12 of 22 cases, and in addition 7 cases called by us something else are called arteriosclerosis by the institutions.

Three cases were called senile dementia. As was pointed out above, this differentiation is often very difficult to make, especially in the more advanced cases, and it often represents an interpretation of certain equivocal signs and an evaluation of conditions which can only be indirectly estimated. Accordingly, although these diagnoses are erroneous, the error is perhaps not a particularly serious one.

Two patients were called organic dementia, just as a case diagnosed by us "organic dementia" was called "cerebral arteriosclerosis" in the other institution. Of course, as pointed out above, organic dementia is not a diagnosis in the ordinary sense of that word; it is merely a recognition of state and a partial putting together of symptoms. Another case is regarded as one of chronic alcoholic psychosis. Here, again, the major symptomatology is much the same in the two conditions, and differentiation depends upon history and the evaluation of certain signs. In this case there is an alcoholic history, but there are also signs of cerebral arteriosclerosis. Another case was left "unclassified," between alcoholic dementia and cerebral tumor, and here from our records the diagnosis would seem to be arteriosclerosis.

Three cases were called manic-depressive. Of these, one is clearly, from our records, a case of arteriosclerotic dementia, and she has apparently an early stage of chorea. Had the chorea come on somewhat earlier in the course and been more marked we should have been tempted to call her a case of "degenerative chorea." There are no evident signs of manic-depressive. To be sure, she has periods of depression and excitement, never long

continued, amounting really to an emotional instability. In the other two cases the portion of the symptomatology which is unusual for manic-depressive lies in the periods of confusion. Aside from this, one case might well be regarded as a manic-depressive-mixed, and the other as a manic-depressive-depressed.

Group IX. Korsakow's Syndrome. — This syndrome is one which has very definite signs, and one in which we should not expect the diagnosis to be in error. However, there were 4 cases in which we seem to have made an erroneous diagnosis. One of these was called alcoholic dementia. It is well known that the outcome of a Korsakow's attack is often dementia, and this dementia is usually very marked. Accordingly, in this case we are probably both right in the diagnosis. A second case recovered from a "toxic psychosis," which, of course, Korsakow's syndrome is. A third case was discharged as recovered from alcoholic hallucinosis. There were here certain slight signs of neuritis and some confusion which allowed us to believe that it was an early phase of Korsakow's. Apparently, however, the damage was not so great and the case ran the course of an hallucinosis. The fourth case was a very interesting one in which we were none too sure of the diagnosis, "Korsakow's," but we were unable, after an exhaustive study for more than a month, to reach any other conclusion. He has been left "unclassified" and is improving.

Group X. Paranoia and Unclassified Paranoid States. — The paranoid conditions constitute one of the most difficult groups in which to make a differential diagnosis. The tendency has been to classify the hallucinated paranoid conditions as paranoid dementia præcox, reserving the term "paranoia" for those cases of very long and slow evolution, in which there is a well-systematized set of paranoid ideas without hallucinations and without deterioration. We made the diagnosis of paranoid in only two cases. In each case the State institutions made a diagnosis of paranoid dementia præcox, which I believe to be correct in one and probably incorrect in the other.

According to Kraepelin's last edition only about 40 per cent of the paranoid conditions with progressive delusion formation, not due to syphilis or alcohol, are cases of dementia præcox. The deterioration is often very slow in developing in these cases. About 50 to 55 per cent of the paranoid group as limited are cases of paraphrenia, while the remaining small percentage are cases of true paranoia.

We attempt now to differentiate the paranoid præcox group from the other paranoid cases by insisting that they show the characteristic emotion and will difficulties of schizophrenia. If they do not show these signs we usually leave them in the unclassified paranoid group. In one case we made a diagnosis of paraphrenia confabulans, which was changed to dementia præcox, paranoid. This and two other changes from unclassified paranoid to dementia præcox represent really differences in standards of diagnosis, and not any particular differences in the conception of the case. The final case, however, was a very interesting legal case in which we were not able certainly to determine the presence of hallucinations or to show any very marked deterioration. We felt that she was probably a paranoid præcox, but thought it safer to leave the case unclassified paranoid. Since being at the other hospital she has shown very clearly the characteristics of paranoid dementia præcox.

Group XI. Unclassified. — Concerning this group I have very little to say. They represent the cases in which for one reason or another we were not able definitely to decide what the psychosis was during the period of observation here. They present, of course, a good many problems, as do all unclassified cases. In 18 of the 23 the other institutions were able to classify them, but the institutions added, to the residue of 5, 8 more cases which they could not classify.

The remaining changes in diagnosis need not be discussed at very great length. They represent for the most part differences in standards of diagnoses. Under the "not psychotic group" are included cases of feeble-mindedness and of psychopathic personality, which had for one reason or another to be committed. They all have a mental disease, although it is not perhaps in the form of a psychosis. The scattering of further changes is not particularly important.

SUMMARY.

Data are presented dealing with the accuracy of the Psychopathic Hospital diagnoses on 419 patients. The Psychopathic diagnosis was determined within ten days in all but a few. In a few cases we had more time, up to a month, to study the case. The cases have been followed for a year to a year and a half.

The figures are based upon the diagnoses made at 11 State institutions, McLean Hospital, and a small group of private sanatoria, to which our patients were committed. Most cases have been reported twice, and in a few instances three times.

The general error in diagnosis is established at 23.0 per cent (omitting the unclassified cases from consideration).

This error is not evenly distributed. Our greatest accuracy is in epilepsy (100 per cent); next in neurosyphilis (92.3 per cent); then dementia præcox (85.2 per cent). Of the larger groups we are least accurate in arteriosclerotic psychosis (54.5 per cent); then in Korsakow's (63.6 per cent); then the acute alcoholic psychoses (66.6 per cent); then manic-depressive and chronic alcoholic psychoses (70 per cent).

Many cases have had more than one diagnosis from the other institutions.

We diagnosed dementia præcox in 183 cases; diagnosis was changed in 28, of which 4 were left unclassified. Twenty-eight cases were added to this group.

Of the 24 definite changes, 2 were unclassified paranoid. In 3 cases our record seems clearly that of a manic-depressive; in 1, manic-depressive plus some unusual symptoms. In these 4 cases there should have been no error. One case of late katatonia should probably not be called manic-depressive. In 3 cases our record is that of dementia præcox, and the outcome is not yet certain. In 4 cases our diagnosis seems symptomatically correct, but not verified by outcome. In 3 cases I believe neither diagnosis to be correct, and in 4 more I am fairly certain the final diagnosis is incorrect, but have no exact opinion as to correct diagnosis. In another case the accuracy of the history must decide; in 2 I can form no opinion.

The diagnosis was changed in 18 of 60 cases called manic-depressive at the Psychopathic, and 21 cases were added. One case is left unclassified.

Of the 17 definite changes, my own opinion is as follows: that in 8 cases, according to symptomatology and outcome, the Psychopathic diagnosis is probably correct; in 4 cases the Psychopathic record is such that a diagnosis of manic-depressive should not have been made, and the other institution is correct; in 3, the second diagnosis is probably correct, although the Psychopathic diagnosis may eventually be proved.

Of the three errors made in the diagnosis of 39 cases of neurosyphilis, two should not have been made, since our record clearly agrees with the other institution's diagnosis. In the third case we recognized the presence of neurosyphilis, which the other institution did not.

Of the four errors in the diagnosis of 12 cases of the acute

alcoholic group, I should doubt the "recovered" dementia præcox; believe that acute alcoholic hallucinosis is a better diagnosis than "toxic insanity;" and believe that a recovered manic-depressive showing "blunting due to the use of alcohol" *probably* had an alcoholic psychosis.

Two of the three errors in the chronic alcoholic group are really not errors, since we did not regard them as sufficiently deteriorated to commit as insane. The other case is a frank error.

In the arteriosclerotic group, changes to senile dementia occur three times. Such changes depend largely upon interpretation of findings. In 4 of the 10 cases in which diagnosis was changed, the second diagnosis seems to be erroneous, and in 2 more the diagnosis is less exact than ours, while 1 case is left unclassified.

The four changes in the diagnosis of Korsakow's syndrome represent: (1) a very difficult case in which we were none too sure of the diagnosis; (2) an end state (dementia); (3) a "toxic" psychosis; (4) alcoholic hallucinosis.

The paranoid conditions are often very difficult of exact diagnosis. Four of the six changes represent differences in diagnostic ideas; one more was caused by further developments in the course of the disease.

Therefore in 396 cases diagnosticated there were 91 changes. Of these, 9 are left unclassified, and the Psychopathic diagnosis may eventually be proved correct. Of the remaining 82, 10 are cases in which, from the Psychopathic record, no error should have been made. In 21 more the Psychopathic diagnosis is probably correct. Three cases classed as errors are not really so. In 3 cases probably neither diagnosis is correct. So if we exclude the cases left unclassified, the cases in which we are probably correct, and those in which there was really no error, we are left with a total of 58 frank errors among 396 cases, or 14.6 per cent. This raises the question, "What is the error in psychiatric diagnosis at large?" which can only be answered by each institution critically analyzing its own diagnoses and errors. Compilation of such figures from several institutions would be of extreme value.

It appears more and more strongly that *accurate observation and intelligent interpretation* are the fundamentals of correct diagnosis, and that there is need of a unification of diagnostic standards.

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EARLY NEUROSYPHILIS ASYMPTOMATICA WITH REPORT OF OBSERVATIONS AND CASES.*

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The purpose of this paper is to review neurosyphilis as it is manifested in its beginning, and to present early case histories of the disease; for it is in the early period of syphilis that the interest of the psychiatrist begins. Indeed, so close is the association between the psychiatrist and the syphilologist that it is incumbent upon the latter to have a psychiatric training. On the other hand, psychiatry follows the treatment of syphilis with the utmost interest. We have only to think of the paretics who are yearly carried off by the thousands in the flower of manhood, of the tabetics, of the other tertiary diseases of the nervous system, or of the hereditary syphilitic diseases of the brain and cord. It is significant of this close association that the first who experimented with and used the Ehrlich Hatto remedy upon man were two psychiatrists.

Although our knowledge of neurosyphilis is not now complete, yet, with such data as are available, one is enabled to visualize the process from its incipency to its fatal stages,—cerebrospinal syphilis or general paralysis.

LABORATORY EVIDENCE OF EARLY NEUROSYPHILIS.

Instances of an abnormal spinal fluid in the presecondary period of syphilis are recorded in the literature.

The most recent and the largest number of cases examined in primary syphilis are reported by Carnaz.¹ This writer studied the spinal fluid in 76 patients. Of the 24 cases examined with a negative serum Wassermann, the average lymphocytosis was 2.4 per cubic millimeter. It was greater than 5 per cubic millimeter (this number he considered pathologic) in 8 per cent of cases. The spinal fluid Wassermann was negative in all 24 cases. Of the 52 cases with a positive serum Wassermann, the average

* A contribution from the Boston Psychopathic Hospital, series of 1919. Read at a "Symposium on Neurosyphilis" at a meeting of the New England Society of Psychiatry held at Worcester, Mass., March 24, 1919.

lymphocytosis was 6.1 per cubic millimeter. It was greater than 5 in 35 per cent of cases. The spinal fluid Wassermann was positive in one case, which in addition presented a lymphocytosis of 9 per cubic millimeter.

With² examined the spinal fluid in 45 cases of primary syphilis with a negative serum Wassermann reaction. Of this number, 1 case presented a lymphocytosis over 10 cells per cubic millimeter (he considered a cell count of 4 or less as normal, and a count between 4 and 10 as suspicious; greater than 10 as definitely pathologic). The spinal fluid Wassermann was negative in all except this one case. Of the 37 cases examined with a positive serum Wassermann, 3 presented a lymphocytosis over 10 cells. The spinal fluid Wassermann was negative in all. The spinal fluid of 20 cases of primary syphilis were examined by Dennie and Smith.³ Of this number, 6, or 30 per cent, had entirely negative serum Wassermann reactions; the spinal fluid was entirely negative. Ten, or 50 per cent, had 4-plus Wassermann reactions on the serum and entirely negative spinal fluid. Four, or 20 per cent, had 4-plus Wassermann reactions and mild spinal fluid findings (lymphocytosis of 4, trace of globulin and slight changes, never exceeding 2, in the first five tubes of the gold sol test; negative Wassermann in all 4 cases).

The older and frequently quoted reports are the following: Wechselmann's⁴ 6 cases of primary syphilis with spinal fluid findings indicative of an involvement of the nervous system. Sixteen cases were studied by Leopold⁵ in whom 6 presented neurologic abnormalities as well as spinal fluid changes. In these cases some of the following subjective and objective symptoms were noted: headache, sensory changes, increased reflexes, Babinski's sign, Rombergism, inequality of pupils and difference in pupillary reactions. In 7 cases suggestive neurologic abnormalities were noted. In these, however, the spinal fluid was normal. Three cases were entirely negative clinically and showed no abnormalities in the spinal fluid. In the 8 cases of Altmann and Dreyfus⁶ 2 showed spinal fluid abnormalities. Wile and Stokes⁷ studied 6 cases of primary syphilis. Neurologic abnormalities were present in 3 of the cases. Slight spinal fluid changes were found in 3 cases, and these changes were marked in a fourth case.

In the secondary period of syphilis, according to the reported observations, alterations in the spinal fluid occur in a large proportion of cases.

Gennerich⁸ states that at some time, either before or during

intensive salvarsan treatment, 90 per cent of his cases showed some abnormality of the spinal fluid. Ravaut⁹ found abnormalities, with pleocytosis or globulin excess or both, in 67 per cent of cases; Altmann and Dreyfus⁶ in 66 per cent; Ellis and Swift¹⁰ in 33 per cent; Robertson and Klauder¹¹ in 70 per cent. On the other hand, Fordyce¹² records less than 20 per cent as showing spinal fluid abnormalities in this period of the disease. In Carnaz's¹ series of secondary syphilitics the spinal fluid showed abnormalities in 40 per cent of cases; in With's² series, 10 per cent of cases; and in Dennie and Smith's³ series the spinal fluid showed slight abnormalities in 35 per cent of cases, and marked abnormalities in 20 per cent.

From the above it is evident that there is no agreement as to the occurrence of abnormal findings in the spinal fluid in the early period of syphilis. This in part may be explained by the varying opinion concerning abnormal lymphocytosis in the spinal fluid. Different writers have chosen different standards. For instance, Isenegger,¹³ after examining a number of nonsyphilitic individuals with apparently normal nervous systems, concluded that the normal spinal fluid contains an average of 2.4 lymphocytes per cubic millimeter. Bloch and Vernes¹⁴ conclude that normally not more than 1 lymphocyte per cubic millimeter is found. In this review the standard normal lymphocyte content was, according to Carnaz, 5; according to With, 10; whereas Dreyfus' standard was 1 to 5 normal; 6 to 9 doubtful; 10 to 20 slight lymphocytosis.

Unfortunately, some of the papers do not contain details of technic. In some instances the simple statement appears, "positive globulin," without mention of the method used in its estimation or the standard used in its reading; also with the Wassermann reaction, no mention was made of the antigen or amount of spinal fluid used.

Of the minor changes in the spinal fluid of early syphilitics, an increase of a few cells and a trace of globulin, it has been questioned by some writers whether these changes are sufficient evidence of a nervous system involvement at this period, or do not more properly represent transient, evanescent, meningeal irritation. Those who hold this view are of the belief that only those cases which show conspicuous spinal fluid changes are candidates for one or the other of the different clinical types of neurosyphilis. The number showing these changes is usually stated to be about 10 per cent. These figures closely agree with the stated

percentage of syphilitics who later develop clinical neurosyphilis. About the only available data concerning the percentage of syphilitics who in later years develop one or the other clinical types of neurosyphilis are the frequently quoted statistics of Mattauschek and Pilz.¹⁵ These writers studied the records of 4,134 cases of army officers who had been infected during the two decades between 1880-1900, the investigators following their careers to the year 1911. They found that 4.75 per cent had developed general paralysis, 2.5 per cent tabes, and about 3 per cent cerebrospinal syphilis. On the other hand, Ravaut¹⁶ is of the opinion that every change in the spinal fluid speaks for a disease of the nervous system. To these minor changes he applied the term "meningo-recidives histologique," in contradistinction to frank symptoms of meningitis. Of interest in this regard are the reported autopsy findings in the nervous system in secondary syphilitics. Zaloziecki¹⁷ reports a case. Neurologically the patient was negative. The spinal fluid showed a pleocytosis, a Phase I reaction and a positive Wassermann reaction. The gross autopsy findings were negative. However, microscopic examination was not made. In Frankel's¹⁸ case the neurologic examination was negative. The spinal fluid showed a positive Wassermann reaction. Macroscopic and microscopic examinations of the nervous system were negative, but, the writer adds, the microscopic examination did not extend over the entire nervous system.

Of importance in the analysis of early neurosyphilis are the reported instances of the finding of the *Treponema pallidum* in the spinal fluid of cases in the primary and secondary periods of the disease.

Marinesco and Minea¹⁹ by means of animal inoculation demonstrated the presence of *Treponema pallidum* in the spinal fluid in 5 of 8 primary cases studied. Of the 5 positive cases it should be noted that the spinal fluid in 3 cases was entirely negative as to other findings; in 3 other cases the fluid showed the presence of 3, 4 and 6 lymphocytes, respectively, a negative globulin and Wassermann reaction; in the 2 remaining cases no mention was made as to the other fluid changes. The serum Wassermann reaction was negative in 2 of the 5 positive cases, and positive in the other 3.

With a specimen of spinal fluid from a case of secondary syphilis Hoffman²⁰ scarified the eyebrow of a monkey. A chancre resulted at the site of scarification. In Steiner's²¹ 20 cases of

early syphilis he demonstrated the presence of treponema in the spinal fluid of 3. In these 3 cases the spinal fluid was entirely negative as to pleocytosis, globulin and Wassermann reactions. Artz and Kerl²² record finding the treponema in the spinal fluid in 2 of 11 primary and secondary cases studied. Frühwald and Zaloziecki²³ studied the treponema content of the spinal fluid from patients in the primary, secondary and tertiary periods of syphilis. Of the 23 cases examined, positive results were obtained in one primary and one secondary case, and also from a case of early meningitis and one of tabes. In the spinal fluid of a secondary syphilitic with a papular eruption who presented clinical and spinal fluid evidence of a nervous system involvement, Fildes, Roderick, Parnell and Maitland²⁴ demonstrated the presence of the treponema by dark-field examination. In 5 positive cases the spinal fluid findings were not stated in 2, definitely negative in 3.

In the above series of positive cases the spinal fluid otherwise was found normal in some and abnormal in others. Subjective and objective symptoms on the part of the nervous system were sometimes present, and frequently absent. The serum Wassermann reaction was negative, but in some instances it was positive. There was thus no regularity in the findings so far as evidences of a nervous system involvement (other than the presence of treponema in the fluid) were concerned.

The *Treponema pallidum* has been demonstrated in the spinal fluid from cases in the post-secondary period, showing acute forms of neurosyphilis, by the following investigators: Nichols and Hough,²⁵ Gaucher *et al.*,²⁶ Reasoner,²⁷ Graves²⁸ and Wile.²⁹ In late neurosyphilis the spinal fluid has been examined and reported negative for treponema by Nonne, Ravaut, Graetz, Siebert, Neisser, Thibierge, Graves and others. However, positive findings in the same type of cases have been reported by other writers. The author has not been able to find an instance of the demonstration of the treponema in the spinal fluid of tertiary syphilis unassociated with demonstrable involvement of the nervous system. When one considers the high percentage of cases in which the spinal fluid shows abnormal changes in the secondary period, and the demonstration of *Treponema pallidum* in otherwise normal fluid in the same period of the disease, it is quite logical to assume that in every case of syphilis at the time of the acute treponememia the nervous system is invaded by the

parasite.* In some instances (Artz and Kerl²² and Steiner²¹) it has been shown that this invasion occurred without causing other abnormalities in the spinal fluid and without clinical symptoms. The tissues of the nervous system viewed in this light did not apparently react to this invasion. Whether this lack of reaction is conditioned by the special characteristics and the virulence of the invading treponemata, or whether, independently of the latter, they are attributable to existing "disposition" of the tissues, cannot as yet be definitely determined.†

It is plausible to assume that the nervous system may later react to early implanted foci of treponemata. The reaction at this would constitute an allergic phenomenon. Moreover, this view is strengthened by clinical observation concerning the rôle that trauma, infectious diseases and emotional stress and strain play as an exciting cause of paresis. Lang,³⁰ writing in 1880, was of the opinion that an organ which is the site of a gummatous lesion must have been affected in the early period of the disease. This opinion is shared by McIntosh and Fildes,³¹ as

* The invasion of the nervous system by *Treponema pallidum* is not characteristic of syphilis as a protozoön infection (it is perhaps generally accepted that *Treponema pallidum* is a protozoön), for it is now known that as soon as *Trypanosoma Gambiense*, the causative agent of sleeping sickness, has found its way into the spinal fluid, the central nervous system is affected.

† An involvement of the nervous system in experimentally produced syphilis in rabbits has been observed and studied by Weygandt and Jacob (*Dermatol. Wehnschr.*, 1914, Vol. LVIII, Ergangshft., 150). These workers studied the route of infection of the nervous system, the histologic changes produced and the question of neurotropic strains of treponemata. They observed that after inoculating rabbits in the testicles, the brain or the intravenous routes, 50 per cent showed changes in the nervous system, and that these changes were the same, whichever route was adopted.

In some of the animals only the mesodermal coverings of the nervous system and their efferent vessels were the site of chronic exudative infiltration; in others, often in those injected with the same strain of *Treponema pallidum*, there was evidence of diffuse processes, especially in the cortex; in addition they were also able to observe primary toxic parenchymatous degeneration, in rare instances developing unilaterally.

The experiments furthermore demonstrate that in some animals (4 of 29 receiving cerebral injections inoculated with the same strain of *Treponema pallidum* and treated exactly alike failed to present nervous phenomena) injections with totally different strains led to the same specific nervous manifestations in all.

These findings thus argue against the theory of a neurotropic strain of treponema, but they give no explanation of the important problem why treponemata of the same strain lead to nervous symptoms in some instances and not in others.

The authors nevertheless are able to conclude that strains of treponemata of very pronounced virulence are particularly prone to lead to severe and diffuse affections of the nervous system, especially in the brain, and that such symptoms appear decidedly earlier than those produced by benign strains of treponemata.

Histologically the changes in the central nervous system in experimental syphilis show a close relationship with meningoencephalitis leutica in the human subject, and at many points in the cortex the changes suggest similar phenomena associated with progressive paralysis, especially with regard to evidences of injury and of primary parenchymatous degeneration which accompany the inflammatory infiltration. In individual instances the authors observed changes with pronounced parenchymatous and endarteritic characteristics in the small cerebral vessels, suggesting a certain resemblance to endarteritic cerebral lues.

expressed in the following statement: "A tertiary syphilitic lesion such as gumma is due to a recrudescence in a remnant of spirochete which has remained *in situ* since the generalization during the acute stage." It therefore appears that every syphilitic is a latent neurosyphilitic.

CLINICAL EVIDENCE OF EARLY NEUROSYPHILIS.

The clinical symptoms of a nervous system involvement in the secondary period of syphilis were recognized long before the introduction of the lumbar puncture by Quincke in 1891. Such symptoms were first described by Guarinone³² writing in 1610, and since then by many of the other earlier writers, — Lang, Nonne, Neisser and notably Fournier. This syphilologist in his *Lecons Cliniques sur la Syphilis* describes in detail the nervous manifestations present in secondary syphilis, — headache, dizziness, torpor, paresthesiæ, areas of analgesia and hypalgesia, etc.

The symptoms of neurosyphilis in the secondary period of the disease are usually referable to an involvement of the meninges. This involvement may be acute or subacute, localized or diffuse, and may be divided into three clinical types: —

1. All the characteristic symptoms of an acute cerebrospinal meningitis even with opisthotonus.

2. An acute psychosis, characterized by excitement, disorientation, confusion, some memory defect, delusions and possibly hallucinations. This type is seen in Case 5, although the patient was not in the eruptive stage, yet comparatively recently infected.

3. Headache.

To these may be added a fourth or asymptomatic group. In this group, although the spinal fluid shows very conspicuous evidence of a meningeal involvement, yet clinically there are no subjective or objective evidences (Cases 1 and 2).

Associated with the first three types, some or all of the following neurologic abnormalities may be noted: exaggeration of the superficial and deep reflexes, Babinski's sign, Rombergism, pupillary abnormalities and sensory changes.

Types three and four are by far the most common. Indeed, the classical and well-known symptom of headache in the eruptive period of syphilis is always meningeal in origin. Not infrequently it is the only symptom present. In some cases insomnia and mild depression may be associated with headache. It may be slight or severe, "headsplitting" in character. It is the existence of the asymptomatic type of neurosyphilis that makes it

incumbent to examine the spinal fluid in order to properly diagnose and treat syphilis at an early period.

Parenchymatous and vascular lesions of neurosyphilis may occur in the early period of the disease, but are exceptional (see Cases 6 and 7).

Of the cranial nerves in early syphilis, the eighth and second are most frequently affected. Crockett³³ in 1897 was the first to call attention to the early involvement of the eighth nerve in syphilis, but little significance was laid by this writer upon its importance.* Indeed, this early involvement remained a neglected diagnostic sign until Wanner³⁴ as well as Beck³⁵ in 1913 again called attention to this involvement as being of great value in the early diagnosis of syphilis. Wanner was able to make a diagnosis of syphilis in 95 per cent of the early cases he examined, before the appearance of any generalized symptoms. The diagnosis of syphilis in these cases was later confirmed by clinical and laboratory findings. Many writers have since reported a very high percentage of involvement of this nerve in the early period of syphilis. In Knick and Zaloziecki's³⁶ series of cases the spinal fluid showed abnormalities in all the cases presenting an eighth-nerve involvement. These writers therefore concluded that this involvement was due to a syphilitic infection of the nerve sheath. The involvement of the eighth nerve may arise directly — a syphilitic process originating in the nerve, a neuritis or by the presence of a syphilitic exudate or infiltrate — or indirectly, pressure due to narrowing of the bony canal or the presence of a basilar meningitis.

In the majority of instances both divisions of the nerve are involved, the cochlear branch often to a greater degree than the vestibular, and the involvement is usually bilateral. Clinically, the involvement of the cochlear is characterized by normal conversational tone perception, a shortening of the duration of perception, by bone conduction out of all proportion to the shortening of the duration of perception for the same fork by air conduction and the retention of good hearing for the low forks, with a loss of perception, or a reduction in duration of perception, for sounds of high pitch.†

* Schwartze in 1869 pointed out that an impairment in the conduction of sound through the bones of the skull occurs regularly at an early period of syphilis. He attributed this impairment to a syphilitic catarrhal inflammation in the middle ear. (Quoted by Taylor: "Venereal Diseases," Lea Brothers & Co., 1895, p. 711.)

† It is of importance to note that deafness therefore is not a necessary complaint in the presence of an eighth-nerve involvement. For the application of this test see the comprehensive paper, "The Diagnostic Value of Lowered Bone Conduction in Syphilis," Groeckerman, Barlow and Stokes, *Am. Jour. Syph.*, 1919, Vol. III, No. 2, p. 241.

In addition to these characteristic findings of a cochlear involvement, symptoms referable to an involvement of the vestibular and semicircular canals may be present. These symptoms are tinnitus, vertigo and vomiting. Indeed, symptoms of cochlear, vestibular, facial and trigeminus nerve irritation may occur at this period of syphilis, — the so-called “Frankle-Hochwarts” disease or “polyneuritis cerebialis Menieriformis.”

Involvement of the second nerve in the early period of syphilis is manifested as an optic neuritis. In my experience this involvement is frequently noted in association with other neurological evidences of a nervous system involvement, and rarely as isolated evidence.

Involvement of the third, fourth, fifth, sixth and seventh nerves in the early period of syphilis are most frequently observed as a neurorecidive. In Benario's³⁷ series of 116 cases of neurorecidive, the cranial nerves were involved in the following proportion: auditory, 43 per cent; optic, 26 per cent; facial, 15 per cent; the remainder divided among the motor oculi, the patheticus, the trigeminus and the abducens. From clinical observations and from Benario's statistical study it becomes apparent that the eighth nerve is the most frequently involved nerve in the so-called neurorecurrence or neurorecidive. Ehrlich³⁸ compares the involvement at this time to the local reaction (Herxheimer reaction) seen in secondary syphilides after an injection of arsphenamine. He is of the opinion that after arsphenamine therapy there occurs a local reaction and swelling in the region of the nerve, and the resulting pressure on the nerve is responsible for the nerve symptom. Appropriate mention may be made of an unusual case recently seen, — a neurorecidive manifested in an involvement of the eighth nerve. The patient complained of headache, deafness, tinnitus and vomiting, and experienced an epileptiform seizure. The pupils were unequal but reacted to light, the right patellar reflex was lively, the left normal, the station showed Rombergism. The spinal fluid was negative. From the findings elicited by Barany's test the symptoms were regarded as due to a hemorrhage in the semicircular canals.

REPORT OF OBSERVATIONS.

In a series of 25 cases an initial examination of the spinal fluid was made in the untreated eruptive stage of syphilis, and a second one after the administration of four intravenous injections of arsphenamine, .5 gram, at seven to ten day intervals. No other

treatment was administered. In each case after the first administration of arsphenamine an accentuation of the eruption was noted, — a Herxheimer reaction. It was observed in one case, an individual with a diffuse macular syphilide who complained of headache, with lively patella reflexes but otherwise neurologically negative, that a spinal fluid lymphocytosis of fifteen remained unchanged after the above treatment. The spinal fluid otherwise was negative in both the first and second examination. In another case (neurologic and spinal fluid examination negative) there developed after the above treatment a spinal fluid lymphocytosis of twenty, and a positive globulin reaction (Noguchi). The 4-plus serum Wassermann remained unchanged. Spinal fluid Wassermann negative on the first and second examinations. A third case (neurologic and spinal fluid examinations negative) complained after the fourth injection of arsphenamine of a severe headache. The spinal fluid at this time showed a lymphocytosis of eighty, and a positive globulin reaction (Noguchi). The Wassermann, with a cholesterolized antigen with 1 cubic centimeter of fluid, was negative,* but subsequently became 4-plus. The 4-plus serum Wassermann reaction remained unchanged. After the continuation of treatment the headache disappeared and the spinal fluid became normal. This occurrence — a neurorecidive in the course of arsphenamine therapy — is not rare. The noteworthy feature is that before treatment the spinal fluid was negative.

REVIEW OF LITERATURE. SIMILAR CASES. NEURORECIDIVE AND HERXHEIMER REACTION.

The above observations are similar to those made by Altmann and Dreyfus.³⁹ They examined the spinal fluid in the primary and secondary period of syphilis before and after the administration of 1.5 grams of salvarsan given in the course of about three weeks. They observed that slight changes in the spinal fluid before treatment would become negative after treatment. In one instance the findings remained unchanged, and in another they were markedly improved. Of particular interest are their observations upon one case which presented no subjective or objective symptoms of a nervous system involvement, and whose spinal fluid was negative. This patient received .4 gram of salvarsan intravenously after which he absented himself from the clinic. However, seven weeks later he returned. At this time he pre-

* Cholesterolized heart antigen and 1 cubic centimeter of fluid were used in all Wassermann reactions reported in these observations.

sented a facial paralysis and an involvement of the eighth nerve. The spinal fluid showed a high pleocytosis, marked presence of globulin, and a positive Wassermann reaction in both high and low dilutions of spinal fluid. The serum Wassermann on both examinations was 4-plus. These writers speak of this phenomenon as a provocative neurorecidive.

Neurorecidive or neurorecurrence is the occurrence in the earlier period of syphilis of a clinical manifestation of neurosyphilis, usually meningeal in nature, with or without an involvement of a cranial nerve, and appearing in the course of arsphenamine therapy. More frequently, however, it occurs after insufficient treatment with arsphenamine and the cessation of all other treatment. At the time of the neurorecidive the spinal fluid shows a high pleocytosis, marked presence of globulin and a positive Wassermann. The serum Wassermann invariably remains unchanged.

The above observations are in accordance with the hypothesis of Gennerich,⁸ that salvarsan has a provocative influence upon changes in the spinal fluid in cases of primary syphilis.

Ehrlich explained the occurrence of neurorecidive upon an immunologic basis. He pointed out that "in these patients the greater part of the infecting organism has been destroyed by the powerful spirocheticidal action of the salvarsan. So rapidly has this been accomplished that the usual tissue immunity which develops as a result of prolonged contact between parasite and host is lacking; as a result, a small focus of spirochetes in the tissues of the central nervous system, thus escaping the spirocheticidal action of the salvarsan, can develop in the susceptible host with great rapidity and severity." Artz and Kerl²² state that "since treponemata are found in the spinal fluid in early syphilitics, we can conclude that neurorecidive is due to activating latent groups of treponemata."

Nonne⁴⁰ summarizes this phenomenon of neurorecidive as follows: "Since the introduction of salvarsan therapy for neurosyphilis, paralysis of various cranial nerves is seen more frequently. This higher frequency is in part only apparent, since more attention has been given of late to auditory and labyrinthine disorders. On the whole, however, it must be considered that salvarsan does activate old foci which without salvarsan therapy would perhaps have remained latent. Perhaps we are dealing in some instances with fresh infections of neurosyphilis, in other cases with a Herxheimer reaction."

In the treatment of secondary syphilis with arsphenamine, the phenomenon of the Jarisch-Herxheimer⁴¹ reaction is observed. This reaction, as was originally described, was a local one, — an accentuation, reddening and swelling of the macular and papular rashes occurring within twenty-four hours after the use of mercury. Its occurrence was later given as a further proof that salvarsan exerts a powerful, direct effect on the treponemata. Before the discovery of the *Treponema pallidum* this circumstance was frequently used for diagnostic purposes (a diagnosis by the method of *Ex nocentibus*), in order to determine whether isolated skin lesions which were only just visible might be pronounced roseola or not.

Ehrlich regards the Herxheimer reaction and similar phenomena observed in salvarsan therapy as an inadequate action of the injection. In his opinion, in such cases the parasites are not at once destroyed, but instead only irritated, and in this condition produce an increased quantity of toxins.

Neisser⁴² is undecided in his opinion as to the cause of the Herxheimer reaction, whether it is due to destruction of the treponemata and a consequent setting free of endotoxins, or whether there is some kind of stimulus imparted to these organisms, with a resultant more copious secretion of toxic matter. Besides this "local" reaction, Neisser mentions a "general" one after treatment with arsphenamine, which is characterized by transitory increase of the headache in cerebral syphilis and of the lightning pains in tabes.

At the present time the term "Herxheimer reaction" is used in a still more general way than Neisser's "general" reaction. It is given as the explanation of the "provocative" Wassermann reaction. It is used to explain local reactions other than in the original sense; for instance, a rupture of an aneurysm following the administration of salvarsan or acute yellow atrophy of the liver subsequent to jaundice and arsphenamine therapy.

The controversy regarding neurorecidive and the effect of arsphenamine upon the nervous system was started when Finger reported 9 per cent neurorecidive appearing in the course of treatment of 500 syphilitics (mostly secondary cases) with arsphenamine. He stated that during the same period he encountered only 5 cases of neurorecidive among 2,000 patients treated with mercury and potassium iodide alone; that he had as many cases of neurorecidive among his 500 salvarsan patients as Mauriac encountered among 10,000 syphilitics in the course of thirty

years. Finger⁴³ regarded neurorecidive as due to the action of arsenic upon the nervous system. This contention was repudiated by Benario,³⁷ who published a monograph on the subject in which he made an analysis of 116 cases. This writer pointed out "that the phenomenon of neurorecidive is syphilitic in nature and disappears as the result of treatment; that it occurs following treatment with mercury;* that its occurrence to the extent of 94 per cent was in the early period of syphilis (within four months after the administration of arsphenamine; 40 per cent occurred in the second month); that it did not occur in the presence of pre-existing syphilitic disease of the nervous system."

The incidence of neurorecidive is variably quoted, the largest percentage being that of Finger. The occurrence of neurorecidive was considerably more frequent in the earlier period of arsphenamine therapy than it is at present. This can be explained on the basis of the treatment in vogue at that time, which was to administer one or two massive doses of arsphenamine in accordance with Ehrlich's unfulfilled dream of *therapia sterilisans magna*. Such treatment we now know in the light of experimental and clinical observations is potent of harm, for in addition to other reasons it increases the likelihood of neurorecidive; therefore the incidence of neurorecidive is directly related to the method of treating acute cases of syphilis in vogue at different periods in the past, or that practiced in different localities.

DISCUSSION OF OBSERVATIONS.

The provoking of a spinal fluid by arsphenamine therapy from negative to positive pleocytosis, the presence of globulin and a positive Wassermann reaction, which manifest an involvement of the nervous system, is in all probability an expression of a Herxheimer reaction. Likewise, a neurorecidive is in all probability a clinical expression of this same reaction. In the first instance one can appropriately speak of this phenomenon as "*neurosyphilis provocativa asymptomatica*," and, in the second instance, as "*neurosyphilis provocativa symptomatica*." This explanation of a neurorecidive is, on the one hand, a laboratory expression, and, on the other hand, a clinical expression of a Herxheimer reaction, as substantiated by the following: —

* Mercury is less powerfully treponemicidal in action than is arsphenamine, and is therefore less likely to produce a Herxheimer reaction. This reaction after the use of mercury occurs more frequently following those methods of administration in which the drug exerts its most powerful treponemicidal action. These methods are by inhalation and by inunction.

1. The considerations of Benario concerning neurorecidive.
2. The appearance of *Treponema pallidum* in otherwise normal spinal fluids.
3. The generally accepted view that the Herxheimer reaction is the explanation of the provocative Wassermann reaction.

The view expressed in the beginning of this paper, that the nervous system of all syphilitics in the period of an acute treponememia is in all probability invaded by the parasite, and that the nervous system apparently in some cases does not react to this invasion, is not inconsistent with the view now expressed that the Herxheimer reaction is the cause of what is styled neurosyphilis provocativa asymptomatica and symptomatica. The arsphenamine most likely causes a reaction of the nervous system to the presence of treponema. We know that arsphenamine is capable of causing such reaction on the part of certain tissues to treponema which prior to the use of this drug showed at least no macroscopic reaction. For instance, the local Herxheimer reaction which occurs during the eruptive stage is often noted in areas where no gross lesions could previously be demonstrated. Moreover, from the classical work of Warthin⁴⁴ we know that there exists an apparent symbiosis of the tissues with treponemata, and that in some instances such tissues show no reaction to the parasite.

We did not observe the provocative spinal fluid change in all cases studied, but we did not vary the time of examination. In the second observation reported (page 102) there occurred a provocative spinal fluid change, but without clinical manifestation of a nervous system involvement. Whether all such cases eventually develop clinical manifestations cannot at this time be answered. However, Ravaut has pointed out that changes in the spinal fluid could precede clinical manifestation a long time. He also showed, however, that the spinal fluid could again become normal without clinical symptoms.

The occurrence of neurosyphilis following the administration of arsphenamine in Case 11 probably supports the belief that it is possible, with the improper use of arsphenamine in the treatment of tertiary syphilitics, to provoke neurosyphilis as manifested in either the asymptomatic or symptomatic stage. As has been already pointed out, the reaction on the part of syphilized tissues in the late period of the disease to the presence of treponema would constitute an allergic phenomenon; therefore the following explanation should be considered: that the intensive treat-

ment with arsphenamine may have activated latent neurosyphilis in this individual. This explanation, in the light of clinical observations and knowledge concerning neurorecidive, Herxheimer reaction and the phenomenon of allergy, is the more likely one.

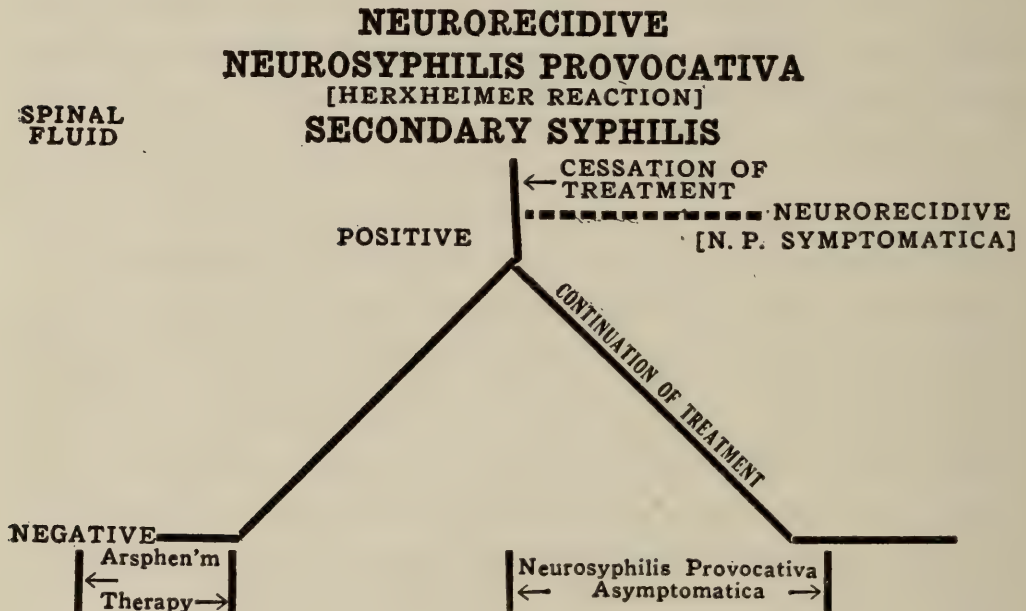


FIG. 1.

Fig. 1 is a graphic representation of the observations herein reported. As already pointed out, neurorecidive is regarded as an expression of a Herxheimer reaction, and may be spoken of as neurosyphilis provocativa, which latter is divided into two stages, — the laboratory or asymptomatic stage, and the clinical or symptomatic stage. This latter stage is ordinarily spoken of as neurorecidive. The spinal fluid at first negative may after arsphenamine therapy become positive, — lymphocytosis and the presence of globulin, — the “meningo-recidives histologique” of Ravaut. In the absence of clinical evidence of a neuraxis involvement this stage is the asymptomatic stage, as illustrated in observation No. 2 herein reported. From our other observations — those of Altmann and Dreyfus, Ravaut and from clinical observation — we can conclude that after provocative spinal fluid changes have been produced one of two possibilities exists, — the cases progress, which is more likely after the cessation of treatment, into a clinical expression of neurosyphilis, the symptomatic stage, or the “provocative neurorecidive” of Altmann and Dreyfus. The other possibility is the occurrence of a negative spinal fluid spontaneously or as the result of treatment, and it may be stated

here that Nonne mentions with no little emphasis the occurrence of spontaneously cured or abortive forms of neurosyphilis.

The Herxheimer reaction may be called an expression of the "heavy artillery" action of arsphenamine, and from this view is a vicious reaction. Its presence is prognostically of bad significance. It should therefore be avoided in the arsphenamine therapy of syphilis. Neurorecidive, a clinical expression of this reaction, is the bugbear in the arsphenamine therapy of early syphilis. In one's clinical experience neurorecidive is not rare, particularly if routine neurologic and spinal fluid examinations are made of all syphilitic patients. Following this custom I have noted in late secondary cases minor neurologic abnormalities, a history of headache which appeared a short time after the last of a few injections of arsphenamine administered during the acute stage of the disease and then the cessation of all treatment. Such instances are represented in Cases 9 and 10. If the view that this type of case is an instance of neurorecidive is correct (and it is founded upon the history of headache appearing after the use of arsphenamine, together with our knowledge that such treatment increases the likelihood of neurorecidive), then in my experience neurorecidive is not by any means infrequent. On the other hand, if one considers neurorecidive only as the frank occurrence of one or the other types of neurosyphilis appearing after salvarsan administration, then its occurrence is much less frequent.

There is apparently an increasing tendency to treat syphilis exclusively with arsphenamine. This is probably not the most rational method of treatment for all periods of syphilis, and particularly for the stage of the acute treponememia. The most rational treatment of the disease at this period is one which will minimize the possibility of the occurrence of a neurorecidive, namely, the thorough and sufficient administration of mercury preceding the use of arsphenamine. Indeed, Altmann and Dreyfus recommend two weeks' inunctions with mercury at this time before starting the use of arsphenamine. Gennerich advocates the administration of 4 to 6 intramuscular injections of calomel before the use of arsphenamine in secondary syphilis. The use of small doses of this drug, certainly, at least for the first few injections, and then the persistent administration of the drug in courses, rather than the haphazard "now and then" method, is to be preferred.

The incidence of neurorecidive has led to the statement that

neurosyphilis has been increased since the use of arsphenamine as a therapeutic agent in the treatment of syphilis. The notable champion of this view was the late Gaucher. In a sense this accusation is true, but it is based upon the improper use of the drug as a therapeutic agent.

EARLY NEUROSYPHILIS ASYMPTOMATICA.

CASE 1. — Male, age twenty-eight. A painter by occupation. Uses alcohol moderately. Family history, nothing remarkable. A history of an initial genital lesion five months ago. Local treatment applied, which healed the sore. Four months later another genital lesion which received only local treatment. No history of past or present headache. His only subjective complaint is "nervousness," although he cannot tangibly define this complaint. He is what is generally known as a "nervous" type of patient, that is, he is apprehensive, easily irritated and anxious. He states that he has always been of a "nervous" type and does not think this "nervousness" has been worse since his infection with syphilis.

Clinical. — A tall, sharp-featured, visceroptotic type. General physical examination is negative. The only evidence of a syphilitic infection is a generalized adenopathy. Heart action is normal. Auscultation at the base of the heart is negative.

Neurologic. — Emotional tone is one of apprehension. The pupils are negative. All reflexes are normal. Station is normal. No sensory disturbances. Eyeground examination is negative. Tuning fork test of eighth nerve is negative.*

Wassermann of the serum: 4-plus.

Spinal fluid: 120 lymphocytes per cubic millimeter.

Globulin: 1-plus.

Wassermann: 1 cubic centimeter — 4-plus (cholesterolized antigen); .5 cubic centimeter — 4-plus; .4 cubic centimeter — 4-plus; .3 cubic centimeter — 4-plus; .2 cubic centimeter — 3-plus.

Gold sol: 1222000000.

With an alcoholic antigen the reaction was the same except with .2 cubic centimeter of spinal fluid a 2-plus was obtained, and was negative with .1 cubic centimeter.

CASE 2. — Male, age twenty-three. Denies the use of alcohol. A history of a genital lesion about two months ago. Received only local treatment which healed the sore. About two weeks ago an eruption ap-

* The Wassermann reaction in these case history reports was performed with a cholesterolized antigen, unless otherwise stated. The test for globulin was made with Noguchi's butyric-acid test.

The following standard of Swift was used in reading the reaction: —

- Opalescence to very faint haze.
- +— Faint haze to haze.
- + Fine granular precipitate.
- ++ Heavy granular or coarse flocculent precipitate.
- +++ Very heavy flocculent precipitate.

peared on the body. No subjective complaint suggestive of early neurosyphilis.

Clinical. — Well developed and nourished. General physical examination is negative except an indurated scar at the site of former sore, a macular papular syphilide on trunk, arms and legs, mucous patches on lips, tongue and tonsils, and a generalized adenopathy.

Neurologic. — Emotional tone is normal. The pupils are negative. All reflexes are normal. Station is normal. No sensory disturbances. Eyegrounds are normal. Tuning-fork test of eighth nerve is negative.

Serum Wassermann: 4-plus.

Spinal fluid: 54 lymphocytes per cubic millimeter.

Globulin: 1-plus.

Gold sol: 0011100000.

Wassermann: 2 cubic centimeters — 4-plus; 1 cubic centimeter — negative.

EARLY NEUROSYPHILIS SYMPTOMATICA.

Meningeal Type — Severe Headache.

CASE 3. — Male, age thirty-one. A history of genital sore, about two months' duration, treated locally. Eruption appeared about two weeks ago, since which time he has been taking mercury pills. For the past two or three weeks he has complained of severe, constant headache, tinnitus, vertigo, malaise and anorexia.

Clinical. — Indurated remains of chancre in sulcus, generalized adenopathy, large papular syphilide, diffuse on trunk, limbs and face. General physical examination otherwise is negative.

Neurologic. — Emotional tone is normal. Pupils are negative. Station, slight swaying. Patella reflexes are exaggerated. Eyegrounds: an optic neuritis. Eighth nerve, positive tuning-fork test.

Serum Wassermann: 4-plus.

Spinal fluid: refused puncture.

Diffuse Meningeal Type — Simulating Epidemic Type of Cerebrospinal Meningitis.

CASE 4. — Male, age twenty-six. Denies ever having had a genital sore. For the past ten days he complained of severe headache of increasing severity, fever, vomiting and ringing in the ears. About two to three days prior to admission he became delirious. At this time his condition was regarded as acute cerebrospinal meningitis, epidemic type.

Condition on Admission. — He was confused, disoriented, incoherent and irrelevant, not completely accessible or co-operative.

Clinical. — Emaciated, no apparent focus of an infection. Heart and lungs are negative. The only possible stigmata of syphilitic infection is a fissured and furrowed tongue. This is either syphilitic in nature or a so-called scrotal tongue.

Neurologic. — The pupils are unequal, react very sluggishly to light. Patellar reflexes are exaggerated and unequal. A bilateral paresis of the sixth nerve; other ocular muscles are normal. The fifth and seventh nerves are normal, the eighth nerve not tested. Slight Kernig's sign. Rigidity of neck. Eyegrounds are negative.

Fields of vision roughly normal.

Serum Wassermann: 4-plus (three different tests).

Spinal fluid: smear and culture, negative. Cells, 215.

Globulin: 3-plus.

Gold sol: 0012210000.

Wassermann: 2 cubic centimeters — 4-plus; 1 cubic centimeter — 4-plus; .5 cubic centimeter — 2-plus.

After antisyphilitic treatment there was an immediate and continued clinical improvement.

Diffuse Meningeal Type — Acute Psychosis.

CASE 5. — Male, age thirty-seven. A German ex-naval petty officer. A history of a chancre about three years ago. Was treated intensively with arsphenamine in Gennerich's service at the Naval Hospital at Kiel. Cessation of all treatment. During almost the entire duration of the war has been on submarine duty in the North Sea. No subjective recurrence of syphilis or subjective symptoms of neurosyphilis. After the cessation of the war has been a petty officer on one of the German merchant marine vessels loaned to the United States government. While acting in this capacity during one of the voyages to this country he developed an acute psychosis. He acted and spoke "queerly." Attempted to stop the vessel to go swimming, became disrespectful to superior officers, attempted to set fire to the vessel, became maniacal.

Condition on Admission. — He was much excited, confused, disoriented, incoherent, not accessible or co-operative. This excited state was of very short duration, for in a few days his psychomotor activity became more normal, and he was then oriented, coherent, accessible and co-operative, but was humoristic, slightly euphoric, playful, a wide range of thought processes. In about one week (no antisyphilitic treatment was administered) his emotional tone was normal, no delusions or hallucinations, insight present, no memory or speech defect. He denied ever having had a similar attack.

Clinical. — The only noteworthy clinical findings were: scar on glans, general adenopathy.

Neurologic. — Pupils equal, react sluggishly to light, brisk patella reflexes, eyeground examination disclosed an optic neuritis.

Serum Wassermann: 4-plus.

Spinal fluid: small lymphocytes, 231. Large lymphocytes, 11. Plasma cells, 2. Polynuclears, 4. Endothelial, 7.

Globulin: 2-plus.

Gold sol: 5555543300.

Wassermann: 1 cubic centimeter — 4-plus; .8 cubic centimeter — 4-plus.

The spinal fluid was negative for *Treponema pallidum* by the following technic. The entire coagulum produced by the addition of 95 per cent alcohol in 15 cubic centimeters of spinal fluid was stained with Fontana's stain.

Paretic Type.

CASE 6. — Male, age thirty-four. Medical student. History of a genital lesion three years ago (no previous lesion) which appeared three weeks after exposure. No treatment until the appearance of the secondary eruption six weeks later. Received weekly intramuscular injections of mercury for the following year; one injection of arsphenamine, which was administered six months after the eruption. About the time of infection he matriculated as a medical student, and attended college from 9 A.M. until 5 P.M.; in addition he worked as a post-office clerk from midnight until 8 A.M. He did this for two years until he experienced a "nervous breakdown." The onset of the "nervous breakdown" was about eighteen months ago, when he became irritable, easily lost his temper, lacked concentration, became forgetful, fatigue easily induced, insomnia, periods of depression and lacked emotional control.

Present Condition. — General physical examination discloses nothing of any importance. No general evidences of syphilitic infection. Mental examination: emotional tone is one of agitation. He has insight and recognizes his condition as due to syphilis. At times his emotional tone is variable, he cries very easily. Decreased cerebration. Some memory defect. No delusions or hallucinations.

Neurologic. — Pupils are normal. Reflexes are normal excepting the knee jerks are lively. Speech defect. Slight tremor of tongue and hands.

Serum Wassermann: 4-plus.

Spinal fluid: cells, 8 lymphocytes.

Globulin: 2-plus.

Gold sol: 5554332100.

Wassermann: 1 cubic centimeter — 4-plus; .7 cubic centimeter — 4-plus; .5 cubic centimeter — 4-plus; .3 cubic centimeter — 4-plus.

Meningeal Vascular Type — Epileptiform Seizure.

CASE 7. — Male, age twenty-three. A history of a chancre eighteen months ago followed by a secondary eruption. In the primary stage a liquid medicine (mercury?) was administered. At the appearance of the eruption arsphenamine was first administered and consisted of a total of seven intravenous injections and two intramuscular injections of mercury. Cessation of all treatment. No complaint until one year later. At this time he complained of headache, and experienced an attack of unconsciousness, speech and memory disturbances. This time the serum Wassermann was 4-plus; the spinal fluid was not examined. He received a

total of eight intravenous injections of arsphenamine and six intramuscular injections of mercury. He has had no complaint until about one month ago, at which time was the onset of his present complaint of headache.

Clinical. — General physical examination is negative excepting scar on penis, general adenopathy, sharply marginated infiltration and congestion of the soft palate suggestive of a beginning gumma.

Neurologic. — No paralysis. Pupils are equal and react normally.

Station. — Slight swaying. Exaggeration of the left biceps, triceps, patellar and tendo-Achilles reflexes. Speech disturbance to the conventional test phrases. No memory defect. No tremors. Emotional tone is normal.

Serum Wassermann: 4-plus (cholesterolized and alcoholic antigen).

Spinal fluid: 134 lymphocytes.

Globulin: 2-plus.

Gold sol: 5555554000.

Wassermann (cholesterolized and alcoholic antigen): 1 cubic centimeter — 4-plus; .5 cubic centimeter — 4-plus; .3 cubic centimeter — 4-plus.

Parenchymatous Type — Transverse Myelitis.

CASE 8. — Male, age twenty-seven. Chauffeur by occupation. Excessive user of alcohol. Married seven months ago. An ulcerative and destructive genital sore (no previous one) six months ago, following extra-marital intercourse. Local treatment applied which healed the sore in about one month. In addition he received about five intramuscular injections of mercury, and for one month mercury by mouth. Denies secondary eruption. No subjective complaint until six months later, at which time he complained of pain (not severe) across the lumbar region and paresthesia of both legs, followed by increasing weakness in both legs; three days later he developed complete paralysis of both lower limbs with loss of sphincter control. No history of trauma or recent infectious disease.

Clinical. — No evidence of a systemic infection. Heart and lungs are negative. Extensive scar on glans penis, general adenopathy.

Neurologic. — Pupils are negative. Paralysis of lower extremities, loss of all reflexes, loss of sensation from level of anterior iliac spines, incontinence of both sphincters. Eyegrounds are negative. Eighth nerve not tested.

Serum Wassermann: 4-plus.

Spinal fluid: 262 cells per cubic millimeter.

Globulin: Nonne, 2-plus; Noguchi, 2-plus.

Gold sol: not tested.

Wassermann: 1.5 cubic centimeters — 4-plus; 1 cubic centimeter — 4-plus; .5 cubic centimeter — 4-plus.

Developed extensive bed sores. Death resulted three months from the onset of paralysis. Autopsy not obtained.

Examination of Spouse. — Age, twenty-four. Mucous patches both tonsils. Acute laryngitis. Pigmentary remains of a recent eruption on

body. Leucoderma on neck, general adenopathy. No subjective or objective evidence of neurosyphilis.

Serum Wassermann: 4-plus.

Refused spinal puncture.

Neurosyphilis Provocativa Symptomatica — Early Type.

CASE 9. — Male, age twenty-nine. Uses alcohol moderately. A history of a genital lesion ten months ago which was treated only locally. Two months later throat became sore. At this time he was given four consecutive intravenous injections of arsphenamine (dose unknown to patient). No other treatment. About two to three months after this treatment he complained of headache. The Wassermann reaction then was 4-plus (spinal fluid not tested.) He again received two intravenous injections of arsphenamine and four intramuscular injections of mercury. No further complaint.

Clinical. — The noteworthy clinical findings are the following: mucous patch, right tonsil; general adenopathy; scar on penis.

Neurologic. — Emotional tone is one of anxiety. The only neurologic abnormalities are lively patella reflexes and an optic neuritis.

Serum Wassermann: 4-plus.

Spinal fluid: 22 lymphocytes per cubic millimeter.

Globulin: 2-plus.

Gold sol: 1224320000.

Wassermann (both with cholesterinized and alcohol antigen): 1 cubic centimeter — 4-plus; .5 cubic centimeter — 4-plus; .2 cubic centimeter — negative.

CASE 10. — Male, age twenty-five. Alcohol very moderately. A history of a genital sore six months ago. The following treatment was administered: four injections of arsphenamine (dose unknown), at two-day intervals, and one intramuscular injection of mercury. The duration of the chancre at the time of this treatment is not definitely known to the patient, but at this time the Wassermann was 4-plus. No subjective complaint of neurosyphilis at this time. Cessation of all treatment. At present the only complaint is headache, duration two to three months.

Clinical. — Pigmentation at site of chancre, generalized adenopathy. Pigmentary remains of secondary eruption, mucous patches. General physical examination otherwise was negative.

Neurologic. — The only possible neurologic abnormality was lively patella reflexes.

Serum Wassermann: 4-plus (alcoholic and cholesterolized antigens).

Spinal fluid: 17 lymphocytes.

Globulin: 2-plus.

Gold sol: 1123220000.

Wassermann: 2 cubic centimeters — 4-plus; 1 cubic centimeter — 4-plus; .5 cubic centimeter — 4-plus; .4 cubic centimeter — 4-plus; .3 cubic centimeter — 3-plus; .2 cubic centimeter — negative.

Neurosyphilis Provocativa Symptomatica — Late Type.

CASE 11. — Male, age thirty. A moderate user of alcohol. A history of a genital sore four years ago. Received local treatment and internal administration of "pills" for about three months. No history of an eruption. All treatment ceased and he was free of all symptoms. Three years later, at which time he was in the army, a routine Wassermann was made which was 4-plus. He then received intensive treatment. Intramuscular injections of mercury and intravenous injections of arsphenamine (dose unknown to patient) at intervals which he recalled were about three, five and seven days. About six months from the beginning of this treatment he developed severe headache, vertigo, a period of confusion, an attack of unconsciousness (epileptiform seizure) and a right facial paralysis. Spinal fluid examination was made, result unknown to patient. Improvement under treatment.

Clinical. — The noteworthy clinical findings are the following: scar on glans penis, bullet type general adenopathy.

Neurologic. — Emotional tone is normal. No memory or speech defect. Paresis of the right side of the face. Pupils are negative. Station is normal. Biceps and triceps reflexes are normal. The right patella and Achilles tendon reflexes are exaggerated; those on the left side are normal. No ankle clonus. Suggestive Babinski on the right side.

Serum Wassermann: 4-plus.

Spinal fluid: 50 lymphocytes per cubic millimeter.

Globulin: 2-plus.

Gold sol: 4443331000.

Wassermann: 2 cubic centimeters — 4-plus; 2 cubic centimeters — 4-plus.

Certain Laboratory Aspects in the Spinal Fluid in the Early Period of Syphilis.

CASE 12. — Male, age twenty-six. A genital lesion about six weeks ago. Phimosis rapidly developed. Local treatment only. Eruption on body three days' duration. No subjective symptoms of neurosyphilis.

Clinical. — Partly adherent foreskin, chancre in sulcus (dark-field positive), maculo-papular eruption on body. Generalized adenopathy. Cardiac rate 130 at rest, 160 after exercise; fine tremor of hands, probably N. C. A. (neurocirculatory asthenia).

Neurologic. — No objective evidence of neurosyphilis.

Serum Wassermann: Fifth day of chancre, negative; tenth day, negative; between fifth and sixth week, 4-plus.

Spinal fluid: 2 lymphocytes per cubic millimeter.

Globulin: negative.

Gold sol: 0011100000.

Wassermann (with an alcoholic antigen): 1 cubic centimeter — negative; .5 cubic centimeter — negative; .2 cubic centimeter — negative.

Wassermann (with a cholesterilized antigen): 1 cubic centimeter — 4-plus; .5 cubic centimeter — negative; .2 cubic centimeter — negative.

CASE 13. — Male, age twenty-eight. A genital lesion about six weeks ago, local treatment only. Eruption on body about 10 days' duration. No subjective complaint of neurosyphilis.

Clinical. — Concealed chancre, beneath a phimosed foreskin, generalized adenopathy. Maculo-papular eruption on body. Cardiac rate of 120; otherwise cardiac examination is negative.

Neurologic. — No neurologic abnormalities.

Serum Wassermann: 4-plus.

Spinal fluid (examined three days after an injection of .2 gram of arsphenamine and one intramuscular injection of mercury salicylate, 1½ grains): 4 lymphocytes.

Globulin: plus-minus.

Gold sol: 1122110000.

Wassermann: 1 cubic centimeter — negative.

DISCUSSION OF CASES.

Instances of early neurosyphilis asymptomatica are represented in Cases 1 and 2. In both cases, one an individual in the eruptive stage, the other in the fifth month of his infection, subjective as well as objective symptoms of a nervous system involvement were absent. The spinal fluid in each case presented definite laboratory evidences of an involvement of the neuraxis.

It is of interest to note that Case 1 complained of so-called "nervousness." It is doubtful whether any relationship existed between this symptom and his infection with syphilis. The relationship between syphilis and the psychoneurotic group of symptoms has not been clearly defined. In this regard one may appropriately recall Kraepelin's syphilitic neurasthenia in his classification of the syphilitic psychoses. In a way these cases are instances of the type which Southard and Solomon⁴⁵ have termed "paresis sine paresia."

Our knowledge is not complete as to the outcome of this type of neurosyphilis if untreated or insufficiently treated. However, we know that the asymptomatic stage of neurosyphilis may precede for a long time the symptomatic stage, or the process may become spontaneously cured, or it may remain latent. This type of neurosyphilitic probably represents that class of syphilitic, which we know exists from clinical observations, who after experiencing traumatic or psychic shock acutely develops clinical symptoms of neurosyphilis. We also know from clinical experience that it is possible to activate latent neurosyphilitics by improper treatment with arsphenamine.

One hope in the combating of neurosyphilis lies in the diagnosis and treatment of the disease in the asymptomatic stage rather than in the symptomatic stage of intellectual deterioration.

Although the spinal fluid was not examined in Case 3, yet the clinical evidence leaves no doubt as to an involvement of the nervous system.

In Case 4, although there was a denial of infection, yet this diffuse meningeal type of neurosyphilis is seen only comparatively early in syphilis; the case is therefore placed in the early group of cases.

In Case 5 there were some aspects which suggested manic type of manic depressive insanity. However, this diagnosis can be excluded by the fact that this psychosis was the initial attack appearing at the age of thirty-seven, the short duration of the psychosis and by neurologic and laboratory findings. The diagnosis of paresis should also be considered. However, the spontaneous remission in such a short time, and the paucity of neurologic and psychiatric findings would tend, but not necessarily, to exclude paresis as the correct diagnosis. This diagnosis is suggested by the type of curve in the gold sol and by the finding of plasma cells in the spinal fluid. However, these laboratory findings are not infallible signs of paresis. In all probability the correct diagnosis is a diffuse meningeal type of cerebrospinal syphilis.

Case 6 is a remarkable instance of what is most likely early symptoms of paresis appearing eighteen months after infection. These symptoms are rather characteristic of one type of early symptoms of paresis. However, this case may be one of cerebrospinal syphilis, since differentiation from paresis in the early period is difficult.

From the history and the neurologic findings in Case 7 one can conclude that the patient experienced a transient hemiplegia about one year after infection. It is important to note that there are some clinical and laboratory features suggestive of paresis. However, this diagnosis cannot be substantiated by these findings.

Case 8 is a remarkable instance of transverse myelitis of syphilitic origin occurring six months after infection. The clinical findings of secondary syphilis on the spouse (whom he had recently married) substantiate the history of a recent infection. The prodromal symptoms present are rather characteristic of this type of neurosyphilis.

The spinal fluid findings in Cases 12 and 13 are representative of a class of early syphilitics who present no subjective or objective evidence of neurosyphilis. These findings are very slight changes in the gold sol (some or all of the first tubes show changes rarely exceeding 3), and the Wassermann may be positive only in the higher amount (1 cubic centimeter or more). The significance of these slight changes in the gold sol as evidencing an alteration in the spinal fluid cannot be definitely stated. The sensitiveness of the gold sol solution and the personal equation in the reading of such curves are factors which should be considered. These slight changes may be obtained in supposedly normal fluids. They are, however perhaps more frequently observed in my experience in the spinal fluid in the early period of syphilis. It is to be noted that in some of the other cases reported very slight changes occurred in the first five tubes of the gold sol, yet from the other spinal fluid findings there was no doubt as to an involvement of the nervous system. In the reports of early spinal fluid changes in syphilis quoted in the beginning of this paper the report of the gold sol findings is lacking in most instances. However, the report of Smith and Dennie is an exception. These writers report similar slight changes in the gold sol in which the spinal fluid abnormalities were present as well as absent. It is possible that the gold sol is the most sensitive indicator of a neuraxis involvement in the early period of syphilis. If such is the case all fluids showing changes in the gold sol curve would place the case in the meningorecitive histologique group of Ravaut.

The interpretation of a positive Wassermann reaction (which not infrequently occurs only in the higher amounts of spinal fluid used), as an isolated laboratory finding in the spinal fluid, is suggested by the work of Kolmer and Sekiguchi.⁴⁶ These investigators were able to obtain a positive Wassermann reaction in the spinal fluid of dogs after injecting them intravenously with human syphilitic serum. Kolmer and Sekiguchi point out that their findings suggest an infiltration of syphilitic reagent from the blood into the spinal fluid, and in all probability explain the occurrence of a positive Wassermann in the spinal fluid in the absence of other spinal fluid abnormalities, rather than due to an invasion of the nervous system with treponemata and a reaction on the part of the nervous system to their presence.

SUMMARY.

It is apparent from clinical and laboratory evidences that there is an involvement of the nervous system in a large group of cases in the early period of syphilis. In addition to this group there is another without neurologic or spinal fluid abnormalities other than the presence of the treponema in the fluid. These observations, together with our clinical and laboratory knowledge concerning the invasive powers of the treponema during the period of acute treponememia, support the belief expressed that at this time probably in all cases of syphilis the nervous system is invaded by the parasite. The nervous system at the time of the invasion may or may not react to the organism.

The clinical phases of early neurosyphilis are presented. The early neuraxis involvement may be meningeal, vascular or parenchymatous. The meningeal type is the most frequent, and is divided into four clinical groups. One of these groups, the asymptomatic, in which there are conspicuous spinal fluid changes indicative of a meningeal involvement, is particularly pointed out.

Of the cranial nerves the eighth is the most frequently involved; then in order of frequency are the following: the second, seventh, third, fourth, fifth and sixth.

Observations are recorded in which positive spinal fluid changes were noted after arsphenamine therapy in previously untreated cases of secondary syphilis with negative spinal fluids. In one case there were only spinal fluid changes; in another, in addition, there was clinical evidence of neurosyphilis. In the latter instance this phenomenon is ordinarily known as neurorecidive. A brief review of the literature is made concerning the observations of others on this subject. Neurorecidive and the Herxheimer reaction are defined, and a brief review of the literature is made. Observations are presented in substantiation of the view expressed that neurorecidive is an expression of a Herxheimer reaction. This phenomenon-neurorecidive is divided into two stages,—the laboratory or asymptomatic and the clinical or symptomatic. The former is styled “neurosyphilis provocativa asymptomatica;” the latter, “neurosyphilis provocativa symptomatica.”

The Herxheimer reaction is regarded prognostically of bad significance, and its excitation should, therefore, be avoided in the treatment of syphilis.

The harmfulness of the insufficient and exclusive use of arsenamine in the early treatment of syphilis is pointed out.

Case histories of early and late secondary syphilis are presented which show various clinical and laboratory aspects of early neurosyphilis.

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REPORT OF A CASE OF BILATERAL GUMMA OF THE EPIDIDYMISS IN A PARETIC.*

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Syphilis of the epididymis with or without an associated involvement of the testicle is one of the rarest of syphilitic lesions. This is particularly true of the latter type of involvement. Indeed, the occurrence of syphilis in this organ has been denied by many writers, notably among whom were Ricord and Virchow. However, authentic instances of gumma of the epididymis with or without an associated involvement of the testicle are reported in the literature.

Lisser and Hinman,¹ writing on this subject, report an instance of an isolated gumma of the epididymis, and give a complete review of the meager literature of the reported cases of syphilis of this organ. A brief review of this literature as made by these writers is given. Cooper, in 1837, was the first to call attention to the occasional occurrence of syphilitic involvement of the epididymis secondary to syphilis of the testicle. Dron, in 1863, first published instances of syphilis primarily affecting the epididymis. This writer reported fifteen such cases; Balme observed thirteen instances in 2,300 syphilitics. Other cases have been reported by Fournier, Reclus, Pascalis, Pinner, Rosenthal and Micheel. Since 1906 the case of Iacobovici has been the only one reported.

Since Warthin² in his classical work demonstrated that, pathologically, the testicle, next to the heart and aorta, is the most frequently infected organ in syphilis, the writer has been palpating the testicles and epididymis in all cases of syphilis coming under his observation; indeed, it was this routine practice which led to the discovery of the case herein reported, the patient having no complaint which might be referred to this organ.

As a consequence of the routine palpating of the epididymis of all syphilitics, it has not been infrequent to note the presence of individual nodes in the epididymis of chronic syphilitics, although these lesions could not always be proved to be tuberculous or

* A contribution from the Boston Psychopathic Hospital series of 1919.

gonorrhœal in origin; moreover, they would disappear after antisyphilitic treatment.

Syphilis involving the epididymis may be unassociated with pain or tenderness and otherwise give rise to no subjective symptoms. It is most likely that a syphilitic involvement of this organ is much more common than is usually believed. The failure to demonstrate this involvement is in all probability a sin of omission. The truthfulness of this becomes more apparent when one considers that in many of the cases reported in the literature the disease was not associated with subjective symptoms.

Since syphilis is most protean in its manifestations, failure to recognize many existing lesions is likely to occur unless the syphilitic is thoroughly examined. This is particularly true of early cardiac and nervous syphilis.

A. S., an American naval officer, aged fifty-one, was admitted to the Boston Psychopathic Hospital March 24, 1919.

Family History. — Nothing remarkable.

Previous History. — Typhoid fever when a child. Denies venereal disease by name and symptom. An attack of influenza, Nov. 6, 1918, at which time he was confined to bed for ten days.

Personal History. — Common school education. Has been a seaman in the merchant marine for the past thirty-eight years. At the outbreak of the war he was commissioned an officer in the naval reserve, and was assigned to duty as executive officer on a naval convoy. Until recently he has been serving in this capacity. A moderate user of alcohol. Married twenty-three years ago. Wife is living (see history below). One son is living, aged twenty (see history below).

Onset of Present Illness. — The patient was well until the attack of influenza four months prior to admission. The initial symptoms of paresis appeared soon after this attack. He became forgetful, confused, irritable, and at times destructive, and developed an obvious speech defect.

Mental Examination. — The patient was accessible and co-operative. The sensorium was clear. There was a distinct speech defect, present not only in the conventional test phrases, but also in conversation. Disoriented in all phases except personal. Marked amnesia, more pronounced for recent than for remote events. No delusion of grandeur or of wealth. No hallucinations. He lacked insight and was suggestible. Euphoric. Attention was wavering. Ideation and cerebration were decreased. Psychomotor activity was increased and at times he was destructive.

Summary of Psychological Examination. — The patient graded irregularly (variation total, 16) at the mental age of 8.5 years. The patient co-operated well.

Neurological Examination. — Sensation, smell, vision, taste, hearing,

cutaneous and deep sensation not impaired. Motor: no voluntary disturbances. Gait is ataxic. Rombergism. No paralysis. Tremor of tongue, lips and extended fingers. Reflexes: corneal, pharyngeal, abdominal and cremasteric are present. All the deep reflexes are equal and exaggerated. No Babinski or ankle clonus. Pupils contracted and irregular; light and consensual reactions are absent; accommodation reaction present.

Physical Examination. — A powerfully built white male with a smooth, ironed-out face. Height, 5 feet 11 inches; weight, 200 pounds. Skin is negative except acne on back and a scar on the lip. Head and neck: ears and nose negative. Mouth: teeth very poor, several missing, tongue thinly coated, with many furrows on the dorsum. Tonsils: atrophied. Fauces and pharynx not inflamed. Thyroid not enlarged. Lymphnodes: not enlarged. Cardio-respiratory: chest normal in size and shape; equal and non-limited expansion. Lungs: resonant; normal tactile fremitus, spoken and whispered voice; vesicular breathing, no râles. Heart: apex beat not seen but felt in the fifth space, not diffused. Measures 12 centimeters and 3.5 centimeters. Sounds, regular and of good quality. No murmurs or thrills. No abnormal accentuations. Vessels: radial pulses equal, regular and synchronous; rate 74 per minute. No sclerosis. Abdomen: liver, spleen and kidneys not palpable. No masses or tenderness. Extremities: negative. Bones and joints: negative. X-ray examination of skull and long bones, negative.

Eye-ground Examination. — Pupils as above noted. No ocular muscle paralysis. Media clear. Discs: normal. Retina and choroid: no gross changes. Vessels: moderate sclerosis of the retinal vessels; otherwise no change. Macular region: no change.

EXAMINATION OF EPIDIDYMES.

Both epididymes are enlarged throughout to about the size of one's middle finger. They are somewhat club-shaped. The head of the right epididymis is larger than the rest of the organ, whereas the tail of the left is larger than the remaining portion of the organ. They are hard, thickened, irregularly indurated and somewhat nodular. The left globus minor is tender on deep pressure, otherwise tenderness is absent. Both organs are free, easily outlined on palpation, and not adherent to the skin of the scrotum or to the testicle. The vasa on both sides are normal on palpation. The right testicle is grossly normal. The left testicle is smaller than its mate, probably atrophied. There is a very moderate varicocele present. The prostate is normal in size and to touch; not abnormally tender; no localized areas of induration or tenderness. Both seminal vesicles are normal to touch (examination of prostatic secretion, see under laboratory tests).

There are no symptoms referable to the genito-urinary organs.
No frequency, no dysuria, no hematuria.

There is no evidence of tuberculosis throughout the body.

No regional lymph node involvement.

Examination of the penis and scrotum negative.

LABORATORY TESTS.

Wassermann reaction: serum 4-plus.

Spinal fluid: 8 lymphocytes.

Globulin: 3-plus.

Albumin: 3-plus.

Wassermann reaction: 1 cubic centimeter — 4-plus; .8 cubic centimeter — 4-plus.

Gold sol: 5555555543.

Blood: Hemoglobin, 90; differential count, polynuclears, 70; small lymphocytes 22; large lymphocytes, 6; eosinophiles, 2.

Urine: straw color; acid; 1022 albumin negative, sugar negative. Several centrifugalized specimens of urine were negative for pus cells.

Secretion obtained by prostatic massage contained the normal constituents.

SPOUSE'S HISTORY.

Mrs. A. S., aged forty-five. Has had four miscarriages, the last one fifteen years ago. No stillbirths; no dead children. Eight years ago, after having headache and drowsiness for three years, she experienced sudden onset of paralysis, at which time she was unconscious; the paralysis involved all her limbs and she was incapacitated for six weeks. She gradually recovered the use of her limbs, but on walking she dragged her right leg. At the time of the paralysis she was treated with pills.

At present she has no complaint.

Neurological Examination. — Slight Rombergism. Pupils are equal and react to light and to accommodation. Right and left biceps, triceps, pronator reflexes are equal and exaggerated. Patellar reflexes are exaggerated, the right more than the left. A suggestive Babinski on both sides, especially the right; fanning of toes and slight extension.

Eyeground Examination. — Discloses nothing that is remarkable.

Serum Wassermann reaction: 4-plus.

Spinal fluid: cells 0.

Globulin: 0.

Albumin: normal.

Wassermann: 1 cubic centimeter, negative.

Gold sol: 0000000000.

HISTORY OF PROGENY.

A. S., Jr., aged twenty-two. Alleged to be well. Refuses clinical examination, serum Wassermann reaction and spinal puncture.

EXAMINATION OF EPIDIDYMES AFTER TREATMENT.

The following treatment was administered: six injections of a total of 2.2 grams of arsphenamine (diarsenol) intravenously at five-day intervals, in doses of .3 gram and .5 gram. Three intramuscular injections of 1 grain of mercury salicylate. Potassium iodide, 20 grains, administered by mouth three times daily for thirty days. At the end of this course of treatment, which was one month from its beginning, the following examination was noted: The right epididymis is normal in size and to touch, excepting the globus major, which is thickened. The left epididymis is normal excepting the globus minor, which is slightly enlarged and thickened, but no longer tender.

This is an unmistakable case of neurosyphilis (paresis), the infection in all probability being of some years' duration. The patient presents a bilateral enlargement of the epididymis of a character which has been described as syphilitic in nature. There were no subjective or objective symptoms to support the belief that the enlargement was tuberculous or gonorrhœal in origin. Moreover, the lesions responded to antisiphilitic treatment in a way characteristic of syphilitic pathology. The diagnosis of bilateral gumma of the epididymis is therefore justified.

In addition, the case presents other interesting features. The symptoms of paresis appeared after an attack of influenza, which latter was most likely an exciting cause. This has not been an uncommon observation among the large number of paretic admissions in the Boston Psychopathic Hospital, and has already been pointed out by Menninger.³ Another possible exciting cause is present, namely, the emotional stress and strain (psychic trauma) coincident with the patient's duty as an officer on a naval convoy during eighteen months of warfare. This duty he performed up to the time of his infection with influenza. Acute outbreaks of paresis among those engaged in warfare have frequently been observed.⁴

The spouse of this patient was regarded as a neurosyphilitic, vascular type, although the spinal fluid was negative; yet a negative spinal fluid in this type of neurosyphilis is after all not remarkable. Here, then, is an instance of conjugal neurosyphilis. The thought of a neurotropic strain of *treponema pallidum*, at least in this instance, is an appropriate one.

Finally, the case is of further interest since it presents a paretic with another clinical manifestation of so-called tertiary syphilis.

This is an exception to the dogma that neurosyphilitics rarely present clinical manifestations of tertiary syphilis involving other systems. In a general way this dogma holds true clinically in the majority of cases, particularly of the skin and osseous systems, but less true of the visceral manifestations of tertiary syphilis, especially of the heart and aorta. Pathologically, this dogma is less true than it is clinically.

Psychiatrically the prognosis is bad. The preponderance of neurological signs, the rapid onset of speech and memory defects are unfavorable signs evidencing a rather extensive cortical cell destruction. This type of case usually does poorly under treatment.

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